THE RUBBER AGE AND TIRE NEWS

Tapping Rubber Trees in Sumatra

November 25th
1917

Ten Cents
a Copy

LIBRARY OF CONGRESS DIVISION PERIODICALS DEC 8 1917

PUBLISHED SEMI-MONTHLY
BY
THE GARDNER, MOFFAT CO., Inc.
120 W. 32nd ST. NEW YORK

RECLAIMED RUBBER

STRONGEST— — CLEANEST

U. S. RUBBER RECLAIMING Co. INC.

42 ND STREET BUILDING · NEW YORK

EUROPEAN AGENTS: ARTHUR MEYER & CO. LTD. 29 MINCING LANE, LONDON, E.C.

Reclaimed Rubber

For All Purposes

QUALITY

VALUE

SERVICE

RUBBER REGENERATING COMPANY

Largest Reclaimers in the World

(FOUR FACTORIES)

Naugatuck, Conn.

MISHAWAKA, IND. MONTREAL, CAN. MANCHESTER, ENG.

PARA PHENYLENE DIAMINE
THIOCARBANILIDE
ANILINE OIL

NATIONAL ANILINE & CHEMICAL CO., Inc.

244 Madison Avenue

NEW YORK CITY

RECLAIMED RUBBER

THAT HAS STOOD THE TEST FOR YEARS

Special GRADES for the following TRADES:

INSULATED WIRE
BOOT *and* SHOE
MECHANICAL—AUTO TIRE
PROOFING
HARD RUBBER

We will cheerfully furnish samples upon request

Somerset Rubber Reclaiming Works

NEW BRUNSWICK, N. J.

Factory—East Millstone, N. J., Somerset County

The Seamless Rubber Company

INCORPORATED

NEW HAVEN, CONN.

Manufacturers of

Druggists' Rubber Sundries

including the famous Kantleek Brand

the original two year guaranteed line

Maderite Tennis Balls, approved by the U.S.N.L.T.A. Pure Gum Bathing Caps in attractive styles and colors, Foot-Ball Striking Bag and Basket Ball Bladders of Pure Gum Stock, Pitchers and Home Plates complete with spikes and other Sporting Goods

Main Offices and Factory, New Haven, Conn.

Inquiries solicited and given prompt attention

THE RUBBER AGE AND TIRE NEWS

NOVEMBER 25, 1917 VOL. II. NO. 5

Member of the Associated Business Papers, Inc.

INDEX TO CONTENTS

	PAGE
Observations on the Rubber Situation in the Far East	167
Theory of the Constitution of Rubber	169
Weather Proofing Rubber Covered Wire and Cables	171
Waterproof Bandages and Their Inspection	173
Activities of the Rubber Association	175
Editorials	176
Notes of Interest to the Rubber Industry	177
News from the Rubber Metropolis	179
With Men in the Trade	180
Two Attractive Window Displays	181
War Activities at the National Capital	182
American Rubber Patents	183
Reviews of New Books	184
Development of Rubber Machinery	184
Market for Manufactured Rubber Goods	185
The Fabric Market	185
Chemicals and Compounding Materials	186
The Crude Rubber Market	187
Scrap Rubber	187
Tire News:	
Pneumatic Tires for Long Haulage	188
Tire Signs on Broadway	188
Tire Expansion in Hot Weather	189
Trucks to Relieve Railway Pressure	189
Notes of Interest to the Tire Trade	190

THE GARDNER, MOFFAT COMPANY, Inc., *Publishers*

120 WEST 32D STREET NEW YORK

Room 308-310 Evening Star Building, Washington D. C.

SUBSCRIPTION PRICE: ONE DOLLAR PER YEAR. SINGLE COPIES TEN CENTS. CANADA: TWO DOLLARS A YEAR. FOREIGN: THREE DOLLARS A YEAR.

COPYRIGHT, 1917, BY THE GARDNER, MOFFAT COMPANY, INC., PUBLISHERS.
ISSUED ON THE TENTH AND TWENTY-FIFTH OF EACH MONTH. FORMS CLOSE FIVE DAYS PREVIOUSLY. ENTERED AS SECOND-CLASS MATTER MARCH 26, 1917, AT THE POST OFFICE AT NEW YORK, N. Y., UNDER THE ACT OF MARCH 3, 1879.

TRENTON N.J., U.S.A. **ESSEX RUBBER COMPANY, Inc.** TRENTON N.J., U.S.A.

"SHED-WET" SOLES
FIBRE-RUBBER SOLES
"ESSEX" RUBBER HEELS

MOLDED SPECIALTIES

Trade Mark

AUTOMOBILE ACCESSORIES

INNER TUBES, CEMENTS, ETC.

MOLDED RUBBER GOODS

THE H. O. CANFIELD CO.

MANUFACTURE

Moulded Specialties, Plumbers' Rubber Goods, Valves, Gaskets; Hose Washers, and Cut Washers of all kinds

Write for prices and samples

Office and Works BRIDGEPORT, CT.

FOR THE EXPERIMENTER

or the Inventor—A complete equipment of rubber machinery for experimental work, where you can try your ideas and see how they work out.

FREDERICK J. MAYWALD, F. C. S.
Consulting Chemist
134 FRONT STREET, NEW YORK
'Phone 823 John

PORTAGE
TIRES
5000 MILES
ASK YOUR DEALER

DEC -7 1917

©CIB399289

THE
RUBBER AGE
AND TIRE NEWS

Observations on the Rubber Situation in the Far East

By Jesse E. La Dow

Secretary of the Mansfield Tire & Rubber Co.

The increase of production of *Hevea* rubber in Malaya in 1916, compared with 1915, was 42 per cent. The output of crude rubber in the Netherlands colony of the Dutch East Indies during 1916 showed an increase of 55 per cent over the production of the previous year, according to the secretary of the Rubber Growers' Association, and judging from the new plantations coming into bearing and the increase in the yield per tree uder tapping, 1917 should show another 55-per cent increase; 1918, 52 per cent and 1919, 42 per cent, or about 120,000 tons.

From these facts it can be deducted that the supply of crude rubber will gradually exceed the demand and that the time is approaching when planters will no longer be able to realize the extraordinary profits they have been making on this commodity. A net profit averaging 45 per cent per pound gold, which prevailed in 1916, cannot be expected in the future.

Some plantations in Malaya have paid dividends, every successive year for many years back of double their capital investment. The Serlangor Rubber Co., for instance, with about 1,850 acres in bearing, produced its rubber in 1915 (last report) at a fraction less than 20 cents a pound. During seven years past this company has paid in cash dividends to its stockholders an aggregate of 1,587.50 per cent on their investment. Besides this it invested $45,000 in war bonds, and holds in reserve premium account and income tax accounts amounting to over $350,000 gold. The 1916 statement was expected to exceed all previous ones.

American rubber manufacturers, directly or indirectly, take fully 70 per cent of the crude rubber output of the Far Eastern plantations. This country consumes four times as much crude rubber as any other country on the globe. The American industry has been giving preference to Ceylon and Malaya in purchasing its crude rubber requirements in spite of a serious obstacle in the form of a permit, which is imposed as a war measure by the British Government. This permit has to be applied for by cable to a London committee, with arbitrary powers, known as the Tin and Rubber Committee. Every pound of rubber bought and paid for by an American manufacturer must be obtained on a permit from this committee before it can be loaded for shipment. The reason given for exacting this formality is the necessity of conserving ship space for munitions and food supplies.

JESSE E. LA DOW

To overcome this difficulty one of the largest American buyers of crude rubber chartered a neutral cargo boat to carry away several hundred tons of crude rubber, which were lying on the wharf at Singapore and had been paid for. This buyer also deposited with the British Government a bond for $250,000 to guarantee that he would not let any of this rubber get into the hands of an enemy of Great Britain either in the crude or in a manufactured state. Notwithstanding all these formalities, he was not allowed to load his rubber until a permit was secured from the London committee. This permit was delayed arbitrarily and the shipper incurred much unnecessary expense.

In Batavia and Soerabaya, Java, rubber of the same quality and grade brings higher prices than in Malaya owing to the difficulties of obtaining British export permits. The obstacles put in the way of buyers in Malaya drive them to make their purchases in

HEVEA RUBBER ON A MALAYAN PLANTATION

the Netherlands Indies and thus increase the value of the commodity in that market.

A large American manufacturer obtained an option upon 20,000 acres of young growing rubber in Perak F. M. S., but allowed the option to expire while I was there. Inquiry developed the reason to be that the colony had enacted a law granting to no one not a citizen resident the title to any land in excess of fifty acres. This discrimination against Americans would appear to be shortsightedness, as it has had the effect of forcing Americans to develop other rubber lands.

Rubber bought at auction in the Far East or at private sale is delivered to the purchaser absolutely naked—no package or wrapping of any kind. The packing is a matter wholly the concern of the buyer, who may have it packed as he chooses. A clean, dry, thin board box is shipped in from Japan and known as the "momi" box; the usual cheaper box is of native red wood boards about an inch thick and usually wet or damp. Some rubber is shipped from Sumatra packed in coffee sacking; more weight can be obtained in the alloted ship space of forty cubic feet, as space is there paid for and not weight. The question of packages is, therefore, one for the purchaser.

There is no difficulty in producing sufficient quantities of crude rubber, the trouble is to get it to America. The best solution of the problem would no doubt be for American rubber manufacturers to build and own their own ships. The export permit and the lack of shipping facilities have reduced the great American industry, representing billions of dollars of investment, to a little more than six weeks' supply of crude rubber. The American rubber industry should not have to rely on foreign bottoms for its supply of crude rubber. Under the present system the rubber is carried to Hong Kong, 1,500 miles from Singapore and 2,000 miles from Penang, and there unloaded and reloaded into other ships, which bring it to American ports.

UNLOADING RUBBER AT A SINGAPORE STOREHOUSE

ROADS ARE GOOD IN MALAYA

Wooden sailing ships with auxiliary oil engines should be put in service by American rubber manufacturers to ply between American ports and the Far Eastern rubber markets. Calls could be made at the Hawaiian Islands, Guam and Manila on the way out to Singapore, Batavia and Penang. Six 5,000-ton ships would supply sufficient tonnage and their cost would not exceed three per cent of the total amount to be expended by the American rubber industry for crude rubber in the Far East during 1917.

These ships would pay for themselves in a few sailings and would insure arrivals of crude rubber which are now uncertain.

Technical Course in Rubber Manufacture*

By H. E. Simmons, M.S.

Professor of Chemistry in the Municipal University of Akron

Copyright, 1917, by The Gardner, Moffat Co., Inc.

SECTION X

Theory of the Constitution of Rubber

To determine the true constitution of caoutchouc is no easy matter, as will be seen from what follows. In the first place, we must be certain that we have obtained a pure sample with which to work. The fact that it belongs in that class of compounds, which occur in the realm of colloidal chemistry, does not simplify our task to any great extent.

It has no definite melting point, no solution from which it may be crystallized. Ozone does form with caoutchouc, an ozonide which is capable of being purified and studied. It was by means of this that Harries came to the conclusion that there existed a slight chemical difference in the constitution of Congo caoutchouc and Para (*Annalen*, 1913, 395, 211). For some time caoutchouc has been given the formula of C_5H_8 and then on account of its analogy to the terpenes it is written $C_{10}H_{16}$ or some multiple of this. Faraday and Berzelius were in possession of this knowledge.

The first important work along this line was done by Gladstone and Hibbert. (*Trans. Chem. Soc.*, 1888, 53, 679.) They tried to obtain pure rubber by dissolving it in chloroform and then precipitating it with alcohol. Even this method seems to give a sample which contains some oxygen.

They found upon analysis of a sample prepared as stated above it contained C = 87.46 and H = 12.00. They calculated its formula upon the basis of C = 88.24 and H = 11.7 when it comes C_5H_8.

We are fortunate, however, in having more evidence as to its formula than that of analysis alone. The usual methods of determining molecular weights, of course, cannot be applied here, colloidal solutions showing very little if any osmotic pressure and obeying the freezing point and boiling point laws of Roult.

Bary and Weidert (*Compt. Rend.* 1912, 154, 1159) assumed that the molecule of caoutchouc was made up of the union of several nuclei of five or ten carbon atoms each. Then they tried to explain that the vulcanization consisted in the union of an atom of sulphur to each end of a chain of $C_{10}H_{16}$ complexes.

If this is true, then the $(C_{10}H_{16})_n$ has a value of nearly 2500, which makes the molecule appear to be a very large one. It is also apparent that if we continue to vulcanize and go on toward ebonite, before that is possible, there must be a breaking down of this large molecule that more sulphur may add itself; or depolymerization, in other words.

It does not seem necessary to hold that the caoutchouc molecule is a large one. We have two derivitives whose molecular weights have been determined, the ozonide and nitrosites, and these point to a carbon content of ten and twenty atoms.

Some day we hope to find a solvent which will resolve the colloidal aggregation of a rubber solution into a true solution and thus make the direct determination of its molecular weight possible.

We know that by certain manipulations we are able to change the aggregations in colloids and thus produce substances of different properties. This Harries did in the case of caoutchouc (*Annalen*, 1911, 383. 157) and he obtained three materials which he designated as *a*, *b* and *c*.

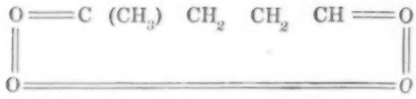
The *a* material is obtained by precipitation with alcohol. The *b* is insoluble and is formed when *a* is allowed to stand. The *c* is an oil obtained from *a* by maintaining a temperature a little above normal. It has been suggested that the caoutchouc exists in the latex in the *c* modification which is soluble in ether. Harries extracted some from the latex with ether and upon standing this changed over into rubber. Weber had observed this and put forth the idea that this substance was a dipentene $C_{20}H_{32}$ in the latex surrounded by a protein which acted as a protective colloid. Therefore, when the coagulation reagent is added, this protein is removed and at the same time the dipentene is polymerized for it becomes insoluble. Henrichsen and Kindscher (*Ber.* 1909, 42, 4329) determined the molecular weight of the hydrocarbon from the latex by extracting it with benzine and determining the lowering of its freezing point. This gave a molecular weight of over 3000, and they felt certain that the rubber existed in a colloidal state and that it was not a dipentene. In 1860, Greville Williams distilled some rubber at as low a temperature as possible and, upon refractioning, obtained two samples with boiling points between 37-40 degs. and 170-180 degs., respectively. The first portion was mostly isoprene and the latter was caoutchine, possessing twice the vapor density of isoprene. Bouchardat (*Compt. rend.*, 1879, 89, 361 and 1117) found that isoprene changed when allowed to remain in a sealed tube to a substance having a different odor. Then Wallach (*Annalen*, 1884, 255, 311; 1885, 227, 292; 1887, 238, 88) pointed out that this substance was identical with caoutchine and dipentene. Then Tilden found that dipentene decomposes into isoprene and this has been found by Wallach to change into caoutchouc.

Thus we may get the relations of these substances as follows: Caoutchouc by heat changes into isoprene and dipentene; dipentene in a red hot tube changes to isoprene; isoprene spontaneously changes into caoutchouc; in sealed tube, however, isoprene goes into dipentene. Other fractions have been obtained and studied, but few conclusions have been drawn from that source.

We know that caoutchouc is an unsaturated hydrocarbon, but the exact degree of this unsaturation has been a subject of dispute. For instance, Gladstone and Hibbard (*Trans. Chem. Soc.*, 1885, 53, 679) described a chloride of the formula $C_{10}H_{14}Cl_8$, which is best explained by assuming the addition of six atoms of chlorine thus indicating these ethylene groups.

Harries then tried the action of ozone upon a chloroform solution of purified Para rubber and obtained a compound giving a molecular weight according to the formula $C_{10}H_{16}O_6$. By a previous experiment, it was found that in ozonides we have three atoms of oxygen associated with each ethylene group, therefore we must have here two such linkages for each ten carbon atoms. Harries also produced a diozonide of the formula $C_{10}H_{16}O_8$. When this was hydrolized there resulted hydrogen peroxide, a keto- or di-aldehyde, lævulimic acid, and also another acid. To explain this, he assumed that the caoutchouc molecule may be represented by an open chain formula. He later found that this was not true, but that the primary products of hydrolysis were lævulimic aldehyde, and the peroxide of lævulimic aldehyde:

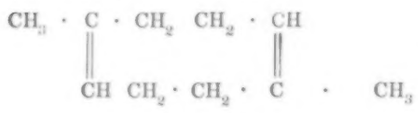
* This course commenced in the July 10, 1917, issue of THE RUBBER AGE AND TIRE NEWS, and will be complete in 28 issues.



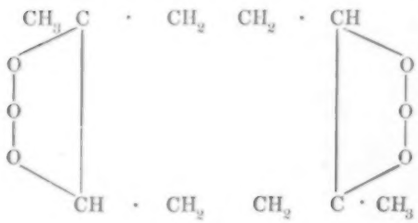
Further hydrolysis of this decomposes it into lævulimic acid and hydrogen peroxide.

To account for these two primary products of hydrolysis from the diozonide and the presence of two double bonds to each ten carbon atoms requires that the molecule be regarded as a cyclic one, because if it was an open chain it would give two hydrolysis products oxygenated at only one end of their chains.

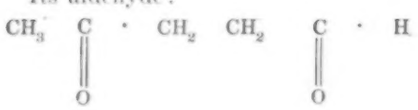
Thus Harries suggested that the constitution of caoutchouc was represented by the formula of a 1:5 dimethylcyclooctadiene:



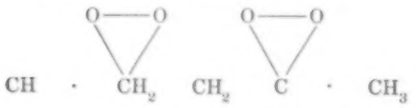
Its ozonide is then:



Its aldehyde:



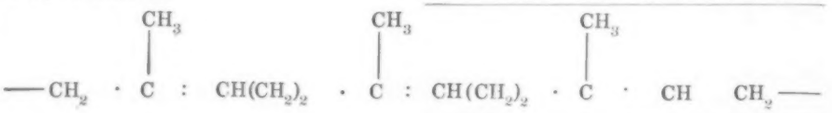
Its aldehyde peroxide:



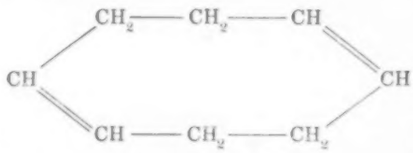
Here Harries suggested that polymerization took place due to unsatisfied partial valences which, according to Thiele's theory, is possible where we have double bonds in octadiene ring formation, and thus an indefinite number might be linked together.

Pickles (*Trans. Chem. Soc.* 1910, 97, 1085) criticises this theory by calling attention to the fact that if this were true, the new polymeride should possess a less degree of unsaturation than the simple substance, and this is not the case. The tetrabromide is also formed without any depolymerization and yet we have four bromine atoms to each ten carbon atoms.

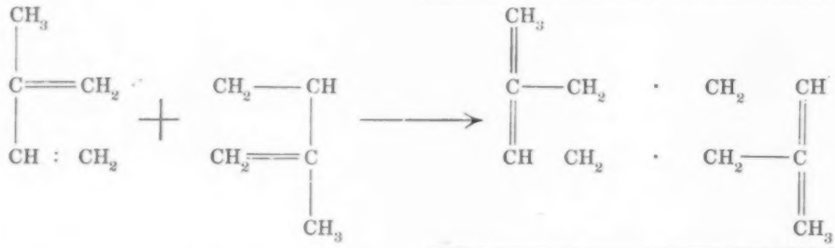
He also points out that under destructive distillation, we should expect to get dimethylcyclooctadiene and this is not the case; and yet even under reduced pressure we never get a substance containing less than twenty carbon atoms. Pickles chose to assign a chain formula made up of C_5H_8 nuclei:



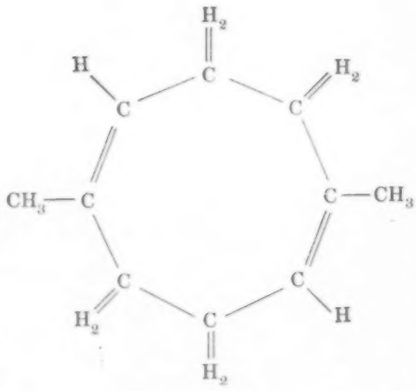
From the study of its oxidation products, we see that the ends of this chain must be linked together. However, the greater amount of favor rests on the side of the eight membered ring. Willstatter (*Ber.*, 1905, 38, 1975) was able to prepare clycloctadiene and this he was able to polymerize to form dicyclooctadiene:



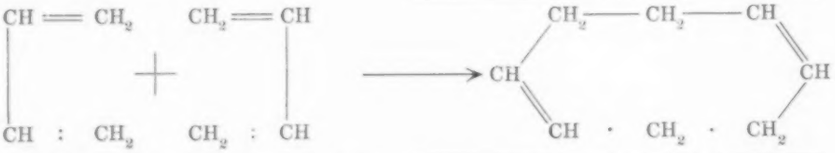
If isoprene may be made to condense and form dimethylcyclooctadiene:



Showing it in ring form:



then it follows that butadiene should yield cyclooctadiene:



When Harries compared the ozonides of butadiene, caoutchouc and cyclooctadiene when hydrolized, he found them to yield the same products. This furnishes us the evidence that caoutchouc is an eight membered ring, and from what has been said above it does not seem necessary to assume that the molecule is any larger than $C_{10}H_{16}$.

When the ozonides of purified Para and of artificial isoprene caoutchoucs are hydrolized, they yield the same products and thus the conclusion that the wild caoutchouc must have the constitution of the polymerized isoprene.

Use of Rubber in Gas Production

Figures on the natural gas output of the United States, which for 1916 have just been given out by the Geological Survey, show a total production for the year of 753,000,000,000 cu. ft. The greatest production for any one state was that of West Virginia with an output of nearly 300,000,000,000 cu. ft. Without such rubber products as pumping and drilling belts, hose for rotary drills, packer rubbers and swab rubbers, gas-well operations could not be carried on.

Voluntary Military Training at Goodyear

In order that the employes of the Goodyear Tire & Rubber Co., Akron, Ohio, may escape some of the severe initiatory knocks that raw recruits must go through at the training camps, the company has formed drill classes for all men of draft age. A United States retired army officer is in charge of the work. Any employe may join the drill classes, though they are primarily for those who are subject to call for military service. When these men are finally called, they will have had a good elementary course in military training, which should enhance their chances for promotion.

Weather-Proofing Rubber Covered Wire and Cables

After receiving a braiding of cotton, jute, hemp or other textile yarn, rubber insulated wires and cables are thoroughly dried in vacuum chambers and then impregnated with weather-proofing compounds, which protect them from the action of moisture and other injurious agents.

The materials used in these weather-proofing compounds are bitumens, petroleum tars, asphalts, ozokerite and other waxes, of which the boiling point is sufficiently high to preclude all danger of the compounds becoming soft at normal temperatures; in fact, the boiling point of these compounds should not be lower than 149 deg. F. The higher the boiling point, the better, provided it be possible to melt the compound at a temperature of not more than 212 deg. F.

Impregnating compounds must not contain oils, greases or other ingredients that have an injurious action on rubber. Resins also are to be barred on the general principle that they make the compounds sticky. They may be used, however, in small proportions.

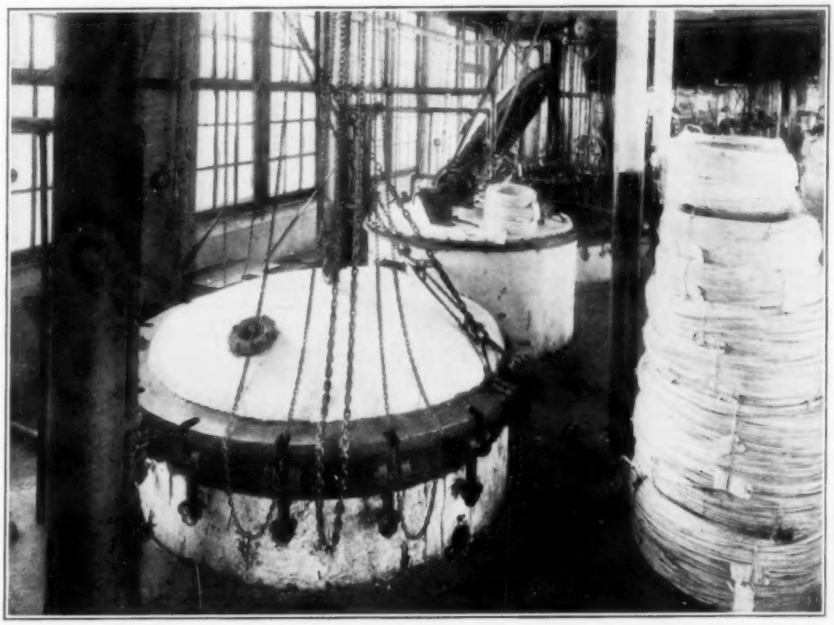
There are in the trade various grades of cable waxes that have the advantage of uniformity of quality, and are consequently easier to handle than raw materials which come into the market in a great variety of grades and vary in quality from one shipment to another and even in the same consignment.

Pitches, tars and other bitumens are excellent for weather-proofing, but are difficult to polish and waxes have to be added to them to make it possible to give a smooth, polished surface to insulations. For this reason some manufacturers use two different compounds, a regular impregnating compound composed of bitumens and a polishing compound containing waxes of either mineral or vegetable origin. These compounds are applied in two separate operations: first, the insulation is impregnated, then it is wiped, cooled and dried and run through a polishing compound.

Impregnating

Impregnating is performed by long immersion in the weather proofing compound by treatment in a vacuum impregnating chamber or by running the wire through a trough-like tank containing the impregnating compound. In all cases the compounds are kept in a highly liquid form by heating.

Where the ordinary impregnating tank is used, the coils of wire are lowered into the molten compound and allowed to remain in it until thoroughly impregnated. These tanks are heated either by steam jackets or coils for circulating hot steam or oil. After being impregnated the wire is passed through wipers, which remove the excess compounds; then they are dried in the open air or, preferably, in vacuum driers.

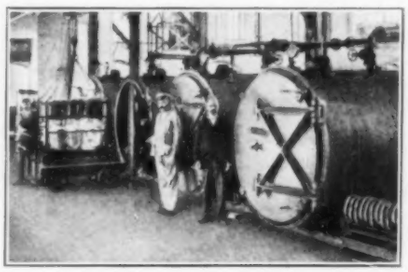


Vacuum Impregnating Chambers

Vacuum Process

Most of the leading manufacturers of insulated wires now use the vacuum method of impregnating their products.

The apparatus used in this process consists, briefly, of a vacuum drying and impregnating chamber, either steam-jacketed, heated with steam coils, or by means of a hot oil circulating system, and a mixing tank heated in the same manner as the vacuum chamber. The coils of wire are placed in the vacuum impregnating chamber and the mixing tank serves to liquefy and mix the impregnating compound. The pipes leading from the mixing tank to the vacuum chamber and their valves are all jacketed for heating to prevent the compound from losing heat, and solidifying in the line. A condenser and combination vacuum pump and air compressor complete the equipment. The mixing tank is provided with a heavily constructed stirring device driven through bevel gears by a direct-connected motor or tight and loose pulleys.

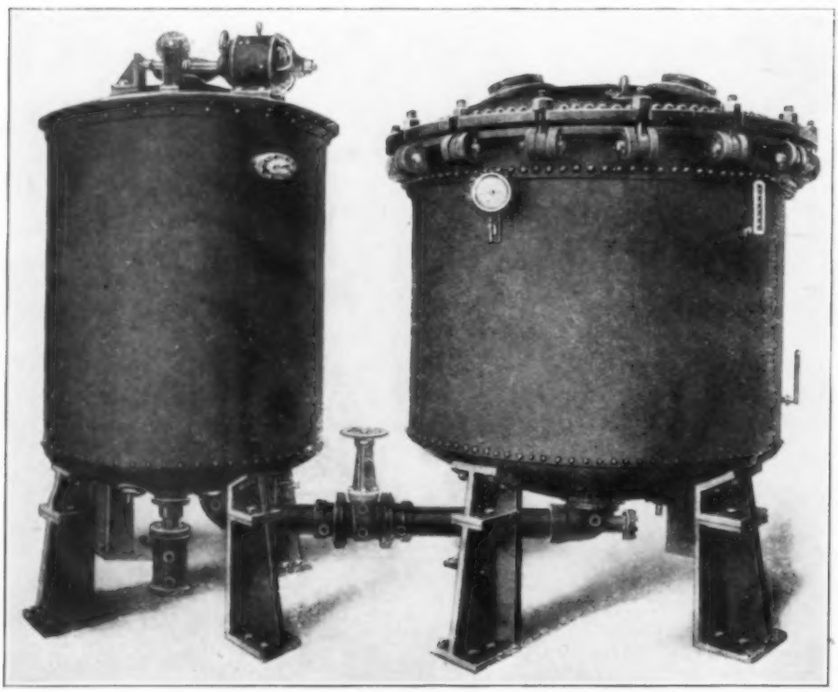


Vacuum Cable Driers

The coils of wire are placed in the impregnating chamber and are there thoroughly dried in a vacuum, which insures the rapid removal of both the air and the moisture from the interior as well as from the surface of the braiding.

The vacuum permits the use of a comparatively low drying temperature which it controls. In this connection it should be remarked that water boils in the atmosphere at 212 deg. F. In a 25 in. vacuum it will boil at 133 deg.; at 26 in., 125 deg. are sufficient to boil it; at 29½ in., only 58 deg. are required, and so on. The higher the vacuum, the lower the temperature. Therefore, by regulating the vacuum maintained on the system the temperature is easily controlled.

When the wire coils are thoroughly dried and while they are still under vacuum, the liquefied impregnating compound is drawn into the impregnating chamber, and due to the air and moisture having been removed from the pores of the insulations, the compound at once penetrates the innermost recesses of the coils and surrounds each and every individual wire. To render this penetration



DEVINE MIXER AND VACUUM IMPREGNATING OUTFIT

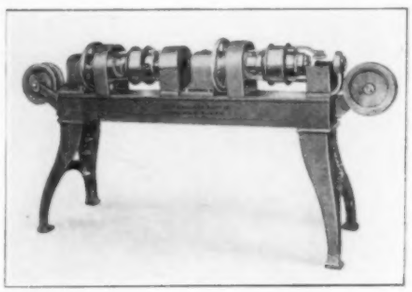
more thorough and rapid, compressed air is admitted into the vacuum impregnating chamber above the surface of the compound, the action of the vacuum pump being reversed, changing it into a compresser, and the pressure built up sufficiently to force the compound into every interstice.

With the vacuum process there is not the danger of overheating which exists in the other processes, but nevertheless it is necessary to keep a constant check on it. For this purpose many manufacturers use recording thermometers which record the temperature at all times in the middle of the impregnating chamber.

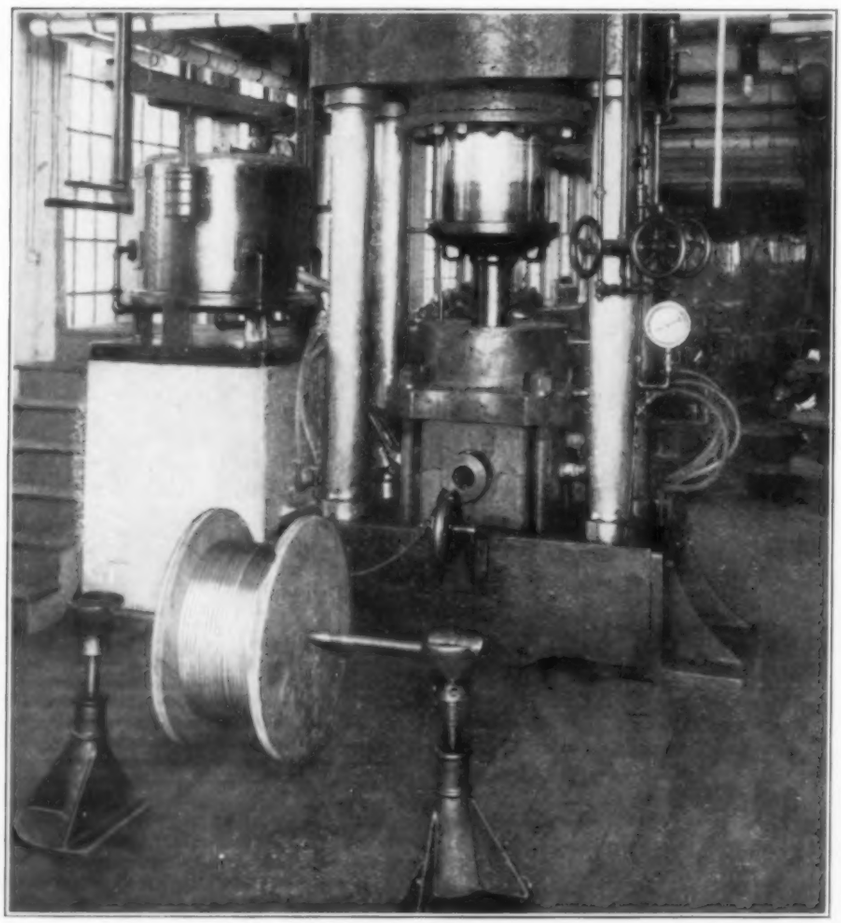
Most of the materials used for impregnating must be boiled to eliminate all their volatile parts.

Polishing

After the wires have been impregnated they are dried, preferably in a vacuum chamber, and then polished. This latter operation is performed by a special machine consisting of a bed, on which are mounted two or more heads for polishing one or two wires at a time. The polishing is done by revolving dies, which are mounted in the ends of spring arms pivoted in driving pulleys. By means of a hand wheel the pressure of the dies on the wire can be regulated while the machine is running. The dies are enclosed in a hinged case which prevents the compound from being thrown about the shop. In the best machines ball bearings are provided for taking the thrust of the polishing heads. Bushings of various sizes are provided for guiding the wires.



POLISHING MACHINE



HYDRAULIC PRESS FOR APPLYING LEAD SHEATH TO WIRES AND CABLES

Lead Sheaths

For certain uses it is preferable to protect rubber insulated wires and cables with a lead sheath instead of a textile braiding. This sheath is applied by means of a hydraulic press which works on the same general principle as the tubing presses used for applying gutta percha covers to cables. The lead is melted in a large kettle, from which it is run into the stock heads of the press. When hydraulic pressure is applied, the lead is forced through a die on to the wire as the latter is fed through a guider in the same manner as in a tubing machine. A good idea of the process may be obtained from the accompanying photograph which shows a large press in operation.

Waterproof Bandages and Their Inspection*

The Chief Staff Pharmaceutical Chemist of the German Army has prepared from his experiences a summary of the methods and principles involved in the manufacture of waterproof bandages. Tests in the field of these bandages have brought out their defects and the way they may be overcome is clearly shown.

The benefit of these experiences may at this time be of special interest to American rubber manufacturers, as indicating the extent to which rubber substitutes are used in Germany. Extracts from Dr. Utz's memorandum follow:

A material frequently employed for waterproof bandages is the so-called gutta percha paper or gutta percha taffeta. The principal features which distinguish gutta percha from rubber are as follows:—Gutta percha becomes soft and plastic under moderate heat (below 70 deg. C.) and gets stiff after cooling without altering in shape from that acquired in warmth and without becoming brittle or sticky. From a solution in chloroform it is often precipitated by ether.

A chemical examination of gutta percha paper enables one to find out its composition without, however, placing one in a position to form a judgment respecting its usefulness as a material for bandages. In the event of a chemical examination being required at any time, the following would have to be ascertained:

1. Water.
2. Ash.
3. Mechanical organic impurities (loss in washing).
4. Resin components.
5. Point of emollition.

Quality of Sheets

The practical examination would have to be directed to ascertain whether the sheets are perfect and without holes; also whether they possess the strength required for the bandages in question. It is possible to get an idea by measuring out a certain weight—say, 1 kg.—of the bandages, or vice-versa, by weighing a piece of the bandages previously measured.

Rubber-covered fabrics were employed as frequently as gutta percha —at least, before the war. The manufacture of such rubber-covered fabrics represents one of the oldest branches of the rubber industry.

At first suitable cotton fabrics were covered with rubber, by merely applying a rubber solution on same by means of a paint brush; this process was repeated until the layer of rubber was sufficiently thick. Naturally the result obtained corresponded to the manner of procedure; the particles of rubber that had only expanded showed off to great disadvantage in shape of strips, knots and dots on the surface. To-day this work is all carried out by means of spreading machines or calenders.

When selecting the fabrics one should take care to get these woven as closely as possible. Knots and unevenness should be limited to the utmost. The large quantity of dressing (size) used for spinning and weaving, especially of poor quality cotton must be carefully removed before covering with rubber is proceeded with, as if any dressing is left in the fabric, it may have a deteriorating effect on the rubber later on.

Solvents Used

The rubber solution to be applied with the spreading machine must be prepared with a suitable solvent. Benzine is mostly used for the purpose, benzol less frequently. It is very important that the solvents be in suitable proportion to the rubber, in order that the finished solution may not turn out either too thick or too thin; in this connection a great deal will depend on the good quality of the rubber employed as well as on the closeness of the fabric to be covered.

It will then be a matter of special importance to remove every trace of the solvent after the covering operation is completed; this is done by passing the fabric at a suitable speed over the heating table, which is heated by steam. If the solvent is not thoroughly removed before the subsequent vulcanization takes place, the durability of the covering process may be very unfavourably affected thereby.

If rapid evaporation of the solvent is forced, for instance, by heating the heating table to higher temperature, it often causes small bubbles to be formed; the rubber separates from the fabric, and this brings about defective spots, which later on, when tested as to its waterproof quality, show up to disadvantage.

It might be added here, that often one does not employ pure rubber solutions for covering fabrics; filling material, and also coloring material—both of an inorganic and organic nature—are frequently added to these solutions.

Testing

The testing of rubber-covered fabrics is not altogether an easy matter. In many cases it is, of course, sufficient to ascertain whether the material in question is really waterproof. To do this a piece is hung up in the shape of a bag and filled with water. This water must not percolate through the fabric, not even after some long period has elapsed. "Billroth" cambric is expected to withstand the pressure of a water column 12-15 cm. high for about one hour and a-half before the first drops of water come through.

A further requisite is that the waterproof materials for bandages must be as supple and non-brittle as possible; nor must the layer of rubber, of course, peel off. The doctors also often ask that it should be possible to properly sterilize these materials.

It may likewise be necessary to note whether the fabrics in question are impervious to other liquids besides water, which are nowadays frequently used for bandages, as, for instance, alcohol solution of aluminum acetate.

For the examination of rubber-covered materials a knowledge of the quantity of rubber and its degree of vulcanization has among other things been required. But consider the determination of the content of pure rubber as superfluous, so long as we do not possess an absolutely unobjectionable process for ascertaining this.

Neither the edges nor the ends of a roll should be employed for the chemical examination.

Chemical Examination

First of all, the quantity of mineral components is ascertained, by carefully reducing to ashes 1 g. of the material to be examined, in the well-known manner. If one wishes to ascertain whether there is any inorganic filling material, the ash obtained can be utilized for this purpose straight away; one should in this case specially look out for lead, which may be present if lead filling material is used, and might even cause lead poisoning.

In order to ascertain whether there is any lead I have taken up the ash with diluted nitric acid in the proportion of 1 : 4 and ascertained the amount of lead by electrolysis in the liquid thus obtained after heating same to about 65 deg. C., a very simple and yet perfectly reliable process.

To ascertain the weight of the rubber used in covering the material, a piece that has been weighed is placed in a round flask, together with 100 to 150 cc. petroleum, and is kept simmering for an hour, a glass tube being used as reflux-cooler. The rubber, resins, etc., will be dissolved

* Reprinted from the *India Rubber Journal.*

thereby, whilst the metallic salts settle at the bottom.

The fabric taken out of the flask after an hour is rinsed in alcohol and then in ether, dried and weighed. As a rule it is free from ash, or nearly so; by way of counter test it is reduced to ash by itself, and any content of mineral components that may be found is deducted.

In the Thal process 5 g. of the rubber-covered material to be examined is heated with 150 to 200 cc. nitrobenzol for three minutes to boiling point. Then the material is taken out of the flask and rinsed twice in 50 cc. of 95 per cent. alcohol. After this, it is treated with warm diluted hydrochloric acid, then rinsed in water, dried at 100 to 105 deg. Cent. and weighed.

Frank and Marckwald use the following process for the same purpose, viz.: A piece of material of 50 sq. cm. is weighed off and is boiled with cumol instead of nitrobenzol. This does not cause the dressing—if there is any on the material—to be decomposed; the material is not carbonized, but nevertheless it is possible to obtain a good and easily removable solution of the rubber coating. The piece of material is then mechanically washed in cumol, rinsed in alcohol and dried. Then the proportion in relation to surface and weight is calculated. The dressing can then be examined at the same time on the material.

After this the number of threads of the material now free from impregnation is then ascertained in the usual manner with the thread-counter.

In my investigations of rubber-covered materials I found:

Weight of a sq. m.	94-184 g.
Weight of a sq. m. material freed from impregnation	54- 72 g.
Coating (impregnation) ..	31-127 g.

Substitute Materials

The above will show in what various qualities rubber-covered materials are produced. To-day we have more than ever to take into account substitutes, both as regards gutta percha paper and rubber-covered materials. If we peruse the literature referring to the subject, we shall see that there are constantly new notices of patents having been granted for the manufacture of materials for waterproofing.

In several cases, if not many, waterproof paper may be found to answer the purpose; this is found in the market in various thicknesses. In my opinion, the oilcloth substitute "Guttatist," of the Ludwig Sell Laboratory, at Passing, near Munich, is quite a good substitute. This is a flexible and yet sufficiently strong greaseproof and waterproof oil paper, which has also the advantage of being very cheap, which is not only suitable for hot and cold water bandages, but also for those with alcohol, acetate of alumina and cresol soap solution.

Experiments to use this substitute as a protection against frostbite—by wrapping up the feet or toes in Guttatist—have yielded good results.

In many cases cellulose products are employed as substitutes for gutta percha. These materials can be produced in all possible colors, very often their appearance is similar to that of gutta percha paper. But I consider the coloring of sheets produced from celluloid as absolutely superfluous, and in certain circumstances even as dangerous. As I already mentioned in a previous report, I was given a gutta percha substitute of French origin, called Filmose, for examination, after the use of which, in moist bandages, a number of patients were attacked by eczema, where the waterproof material had come in contact with the skin.

The investigation showed a cellulose that had not been nitrated. The material was practically non-inflammable, and absolutely waterproof; on the other hand alcohol and aluminum acetate gradually sweated through. Hot water and sterilization in autoclave did not change the material.

The peculiar yellow color could easily be extracted by treatment with 90 per cent. alcohol, and with diluted alcohol with an addition of glycerine. The solution of the dye with the addition of diluted mineral acids became of a red color; it was not possible to discover the special origin of the dye, but in any case same belonged to the group of nitro, nitroso or azo dyes.

A short time ago I received a similar product, but of gray color. The same complaint was made about it as respecting the substitute described above; in this case also the green dye could be extracted by digesting with 90 per cent. alcohol.

Artificial coloring of gutta percha substitutes which are to be used for medical purposes is not only absolutely superfluous, but may even be dangerous, and there is scarcely a justifiable reason for such coloring.

Manufacturing Processes

There are very numerous processes for the production of gutta percha and rubber-like materials suitable for the manufacture of waterproof fabrics. In most of these methods of working the basis consists of linseed oil or varnish, colza oil, maize oil, etc.

For instance, linseed oil is brought into very close contact with hot air in suitable apparatus, whereby an addition of nitric acid may appreciably further the chemical process. The results of this manner of procedure are solid masses, which are placed in water and worked up into strips by means of glass cylinders, being washed at the same time; the product obtained resembles rubber, is of yellow to brownish color and insoluble in alcohol, ether, carbon bisulphide and chloroform; at a fairly high temperature it can be treated with sulphur.

These and other similar products form to-day to a great extent the basis for the manufacture of the Billroth cambric substitute. The well-known Billroth cambric is a cotton fabric filled with aluminum salt and covered on both sides with a layer of subsequently vulcanized rubber.

The Billroth cambric substitutes are mainly yellow in color, now and again they may also be "field gray," and more or less flexible. Their value is judged, as in the case of all waterproof bandage materials, by determining their impermeability to water, or, in certain cases, to other liquids also.

By holding the fabric against the light the run of the threads can easily be ascertained; even without removing the impregnated mass it is possible in most cases to find out the number of threads by means of the thread counter.

Unfortunately, now and again, there are among the Billroth substitutes some which are more or less sticky; such products are, of course, not very suitable for bandages.

From the weight of the material before and after the removal of the impregnation substance it will naturally be possible to form some judgment with respect to the quality of the goods.

Effect of Substitutes

But a short time ago, however, a doctor complained to me that by using Billroth cambric substitutes on some patients unplesant cases of eczema had occurred. First of all, I thought of the employment of artificial dyes similar to those that I had noticed in substitutes for gutta percha paper. But investigations carried out in this direction yielded no results.

Then I examined—in consideration of the method of manufacture mentioned above with nitric acid—whether there might possibly be some free acid present. The result obtained was positive, but it could be proved that no mineral acids were present. It was therefore a question of the presence of an organic acid which, as was proved by further tests, partly evaporated with water vapor.

This free acid, especially when present in considerable quantity,

might well be considered to be the cause of eczema noticed by the doctor. It therefore had to be further ascertained in what quantities the free acid was contained in the Billroth cambric substitute in question.

Test for Free Acid

The test was carried out in the following manner: A piece of the material, measured and weighted, was digested for 24 hours at a temperature of about 37 deg. Cent. (body temperature) with water, being shaken at short intervals, and the free acid was then titrated with $\frac{n}{10}$ soda lye by employing phenolphthalene as indicator.

By way of comparison a piece of real Billroth cambric (piece goods) was tested in the same way; a piece of 100 sq. cm. used up 0.1 cc. $\frac{n}{10}$ soda lye. The weight of this 100 sq. cm. material was 1.2020 g.

The examination of Billroth cambric substitutes of various origins yielded the results given in the table below.

Two samples of prepared paper (oil paper) used up for the extraction from the same surface as in the case of the Billroth cambric substitutes: 0.2 and 0.3 cc. $\frac{n}{10}$ NaOH. In two further tests of prepared paper the aqueous extract gave a distinctly alkaline reaction.

Some of the substitutes for Billroth cambric showed the appearance that the edges or the parts of the roll turned to the light were gradually becoming darker, probably in consequence of a process of oxidation. In these parts of the bandages an increase in the consumption of $\frac{n}{10}$ NaOH for saturating the free acid could be ascertained; it amounted to 1.55 ccm. in the parts that had become brown as compared with 0.5 cc. in the parts which remained unaltered.

As may be gathered from the above comparative table, the consumption of $\frac{n}{10}$ soda lye fluctuates very considerably in the different commercial kinds of Billroth cambric substitutes; the lowest value is 0.1 ccm., the highest 3.4 cc. I should consider it premature to want to fix a limit figure on the basis of the material examined so far; but I do not think that I shall be wrong by making the following proposal:

The aqueous extract from 100 sq. cm. of the Billroth cambric substitute may not consume more than 1.0 cc. $\frac{n}{10}$ soda lye (phenolphthalene being used as indicator) for saturating the free acid. All the manufacturers of this bandage material will probably be able to keep within the limit above mentioned.

Activities of the Rubber Association

At a meeting of the Rubber Sundries Division of the Rubber Association of America, recently held at the Association Rooms, 17 Battery Place, New York, the standardization and elimination of certain sizes of rubber bands was recommended to the rubber sundries trade and have since been adopted by each individual member of the division.

The standards as approved by the members of the Rubber Sundries Division were formally accepted at the convention of the National Association of Stationers and Manufacturers, held recently in Chicago.

Following is the committee's report in full:

DESIGNATION OF NUMBERS

The committee recommends that all manufacturers adopt the catalogue numbers in use by Eberhard Faber for the 0, 00, 000 and 0000 bands as follows:

No. 61 for	.0	1/4 in.
No. 62 for	.00	1/4 in.
No. 63 for	.000	1/4 in.
No. 64 for	.0000	1/4 in.
No. 71 for	.0	3/8 in.
No. 72 for	.00	3/8 in.
No. 73 for	.000	3/8 in.
No. 74 for	.0000	3/8 in.
No. 81 for	.0	1/2 in.
No. 82 for	.00	1/2 in.
No. 83 for	.000	1/2 in.
No. 84 for	.0000	1/2 in.
No. 91 for	.0	3/4 in.
No. 92 for	.00	3/4 in.
No. 93 for	.000	3/4 in.
No. 94 for	.0000	3/4 in.

No. 105 for heavy package 6 in. long.
No. 106 for light package 6 in. long.
No. 107 for heavy package 7 in. long.
No. 109 for heavy package 9 in. long.
No. 142 for light package 3½ in. long x ½ in.
No. 143 for light package 3½ in. long x ¾ in.

The committee is of the opinion that the use of these numbers will simplify the designations of these sizes of bands, and will be appreciated by the dealer.

STANDARD LIST PRICES

The committee discussed the matter of a standard list price with the result that the present list now in use be adopted for those who sell rubber bands by the gross and great gross from list. It was agreed that this recommendation be made with the additional statement that this list price refers only to the gross list made necessary by reason of the custom of selling goods on a list and individual discount, each manufacturer making his own discount and the list not being the actual selling price. Those manufacturers who sell on net do not use the list at all.

ELIMINATION OF STYLES

The committee communicated with all of the members of the Rubber Sundries division, also manufacturers not members of the division, for the purpose of suggestions for the elimination of styles and reducing the line, with the result that we recommend the elimination of the following sizes:

5, 13, 15, 17, 20, 21, 22, 24, 25, 26, 28, 51, 75, 76, 77, 78, 85, 86, 87, 88, 0000—1 in., 4½ package, 1 in. light, 1½ in. light.

By the elimination of the Thread Bands, the lengths of those retained would be as follows:

6, ⅝ in.; 7, ¾ in.; 8, ⅞ in.; 9, 1 in.; 10, 1¼ in.; 11, 1½ in.; 12, 1¾ in.; 14, 2 in.; 16, 2½ in.; 18, 3 in.; 19, 3½ in.

By the elimination of No. 13, we recommend that No. 12, which is now 1⅝ in. x 1/16 in., be made the length of No. 13, which is 1¾ x 1/16 in.

We further recommend that in consequence of the change of No. 12, to make the list price of No. 12 $3 instead of $2.75, and to make the list price of No. 14 $3.50 great gross because of the elimination of No. 15.

By the elimination of No. 28, the list of which is 60c. per gross, the committee recommends that the price be changed on No. 29 to 60c. instead of 65c., thus maintaining the same differential price for No. 29 as had been established for the No. 28 and making the price uniform from No. 27 at 50c. to No. 33 at $1, with a variation of 10c. per gross list on each number.

THICKNESS OF RUBBER BANDS

The matter of the gauge used for the thickness of rubber bands varies very slightly, and the prevailing thickness appears to be 1/32 of an inch for Thread Bands; also, for Nos. 27 to 94, inclusive, No. 20 and No. 50 gauge, 1/16 of an inch; light package bands, 1/32 of an inch; heavy package bands, 1/16 of an inch. Inasmuch as the variation is so slight, the present thickness as now used by each manufacturer can be continued without any change.

WIDTH AND LENGTH OF BANDS

We find the widths and lengths of some of the numbers vary, and the committee has gone into the matter very carefully and recommends the following dimensions on all rubber bands as follows:

No. 6	⅝ x 1/16 in.
No. 7	¾ x 1/16 in.
No. 8	⅞ x 1/16 in.
No. 9	1 x 1/16 in.
No. 10	1¼ x 1/16 in.
No. 11	1½ x 1/16 in.
No. 12	1¾ x 1/16 in.
No. 14	2 x 1/16 in.
No. 16	2½ x 1/16 in.
No. 18	3 x 1/16 in.
No. 19	3½ x 1/16 in.
No. 27	1¼ x ⅛ in.
No. 29	1½ x ⅛ in.
No. 30	2 x ⅛ in.
No. 31	2½ x ⅛ in.
No. 32	3 x ⅛ in.
No. 33	3½ x ⅛ in.
No. 50	2 x 1/16 in.
No. 61	2 x ¼ in.
No. 62	2½ x ¼ in.
No. 63	3 x ¼ in.
No. 64	3½ x ¼ in.
No. 71	2 x ⅜ in.
No. 72	2½ x ⅜ in.
No. 73	3 x ⅜ in.
No. 74	3½ x ⅜ in.
No. 81	2 x ½ in.
No. 82	2½ x ½ in.
No. 83	3 x ½ in.
No. 84	3½ x ½ in.
No. 91	2 x ¾ in.
No. 92	2½ x ¾ in.
No. 93	3 x ¾ in.
No. 94	3½ x ¾ in.
No. 105 Package	5 x ⅝ in.
No. 106 Package	6 x ⅝ in.
No. 107 Package	7 x ⅝ in.
No. 109 Package	9 x ⅝ in.
No. 142 Light	3½ x ½ in.
No. 143 Light	3½ x ¾ in.

GENERAL REMARKS

The committee has given the above matters very thorough consideration, and has had assistance from a majority of the members, to whom they extend their thanks in eliminating the sizes recommended by the committee. In eliminating the sizes recommended, we have dropped eight tubes from which these sizes are cut, and which will be of material benefit to the factories.

Use of Tractors on Plantations

A striking example of the value of the tractor in expediting farm work is shown by the employment of one of these labor saving machines on a rubber plantation of 20,000 acres in Sumatra, controlled by one of the largest tire manufacturers in this country. In former days it required 250 coolies to plow three acres a day, but by utilizing a tractor twenty acres are now plowed in the same time, and consignments from the plantation are now coming to the American factory.

W. D. MOFFAT
PRESIDENT
W. I. SEAMAN
TREASURER
ROBERT BROWN
SECRETARY

THE RUBBER AGE AND TIRE NEWS

H. M. WILLIAMS
EDITOR
W. M. MILNER
ASSOCIATE EDITOR
PETER P. PINTO
MANAGING EDITOR
GEORGE NEWBOLD
BUSINESS MANAGER

Vol. II | November 25, 1917 | No. 5

THE announcement by the Government that the manufacture of pleasure cars would necessarily have to be curtailed caused much consternation and speculation among manufacturers and dealers throughout the country, but now the atmosphere has somewhat cleared and the trade has begun to realize that pleasure cars may still be produced in so far as the steel used is not needed for the manufacture of army trucks, airplanes and munitions.

Undoubtedly many factories or parts of factories will be taken over by the Government, but from present indications pleasure cars will continue to be produced in smaller numbers with the materials and factory space not needed by the Government. The time may come when even this much will not be allowed, but the present should be devoted to adapting production to suit circumstances.

To deprive the thousands of automobile and tire dealers throughout the country of their sources of revenue would be a real hardship and as such, serious thought should be given to the suggestion presented by the Automobile Industries Committee to the effect that nearly all automobile and tire factories may in part be converted into plants devoted to the manufacture of any article of rubber, metal, cloth or wood needed for a vigorous prosecution of the war. This will be in addition to the manufacture of the regular line of automobiles.

Help Win the War—Save Food

Food will win the war. Don't waste it.

Conserve food, especially beef, sugar, fats and wheat.

Use less wheat and meat. Buy local foods.

Serve just enough.

He who wastes a crust of bread prolongs the war.

Use substitutes for wheat and help win the war.

Save the food and help the fighter fight.

Fat is fuel for fighters. Save it.

Eat wisely and keep the wolf from the door of the world.

Eat at least one wheatless meal a day.

Do not eat meat more than once a day.

If, however, pleasure car manufacturers will put appropriate bodies on their regular chassis and form motor trucks for use in freight transportion it is probable that the Government will not limit steel and other materials needed in this work. Such trucks will tend to relieve the transportation conditions on railroads and may prove to be a decided boon for the automobile and tire trade.

By this system pneumatic tires would doubtless be used on these light trucks, but if a large volume of solid tires are used it will mean that prominent tire dealers must install means for fitting these tires and this is sure to require a considerable outlay of capital, provided that such hydraulic presses could be obtained.

If dealers can properly equip themselves now with such presses it will be a great aid after the war for the value of trucks for hauling long distances will then be in greater favor and solid tires will be an addition to the dealer's lines.

Standardization as a War Measure

War is a good teacher and it is a pity that some manufacturers need a war or something equally momentous to make them realize the necessity of conservation. Waste is going on everywhere—waste by means of improper use of energy and good systems, and waste through useless application of men, money and materials.

One of the biggest wastes in this industrial nation is due to a great lack of standardization. What happened when the Government recently undertook to manufacture motor trucks is well known. Standardization made possible the success of these trucks and it is bound to act as a lesson to all manufacturers in the future.

A similar condition now confronts the Shipping Board and it will be interesting to note just how Henry Ford proposes to deal with it. An inkling of his intentions can be obtained from an incident which occurred in Washington when he asked how many kinds of ships were being built. "Well, we are building eight and there are a few more types under consideration." Mr. Ford's immediate remark to this was, "That's seven too many already."

Mr. Ford's successful application of standardized methods in manufacturing automobiles increases our wonderment that other trades do not or will not adopt similar methods.

The tire manufacturers, for instance, are still content to make special sizes for the convenience of a few consumers. They still continue to manufacture odd sizes for which there is little demand but which nevertheless require carrying a large equipment of cores and molds. This means also that large storage spaces are necessary besides the outlay of capital required to obtain and maintain this equipment. Is this standardization?

When will tire manufacturers agree among themselves to do away with this practice? When will they decide to abide by the S. A. E. standards, and when will they force car manufacturers to conform to these standards?

Notes of Interest to the Rubber Industry

New Rubber Concern in Canton—Rubber Workers Aid Fighters—Majestic Rubber Moves—U. S. Rubber Employes in U. S. Service—K. & B. Opens 'Frisco Office—Plymouth Considering New Factory Site

New Rubber Concern

The Canton Leather and Rubber Co., of which W. T. Bonner is general manager, has been incorporated with $500,000 capital stock to engage in rubber and leather manufacturing at Canton, Mass.

Among other products this company will manufacture eventually will be tennis and outing rubber-soled shoes.

The organizers are well known business men. Guy A. Ham, president of the concern, is a prominent Massachusetts lawyer and banker.

Mr. Bonner has for five years been connected with the Plymouth (Mass.), Rubber Co. of Canton, and is well known to the rubber industry throughout the United States and Canada. He has taken out many chemical and mechanical patents in connection with the rubber and automobile industries. Mr. Bonner was the inventor of the asbestos brake now in use for automobiles all over the world, and which was developed and perfected by him in 1907 and 1908, several patents having been taken out to cover the various types. Several years ago he was connected with the Thermoid and Empire Rubber companies.

Output of Arctics for Army Use

At a conference with an auxiliary committee of the Council of National Defense on Nov. 6, manufacturers of rubber overshoes agreed to turn over to the Government for the Army the entire output of four-buckle arctics until Jan. 5. This will mean approximately 300,000 pairs. Orders for rubber hip boots had been placed previously.

Rubber Workers Aid Fighters

A patriotic movement which had its beginning among the employees of the American Hard Rubber Co., College Point, New York City, has developed into an undertaking of noteworthy proportions. The workers of this company's plant gathered together small contributions among themselves for a fund with which to entertain men from among their number, who had enlisted in or were selected for the land and sea forces of the nation. Their idea was to have these men return to College Point before going into service abroad, to be feted and entertained and shown the places which they hold in the hearts of their co-workers.

The movement spread to four other factories of the community, where the same ideas were put into effect for the men who had entered the service. Finally, representatives were chosen from each factory as members of a committee of the whole, which was organized.

Having learned from the military authorities that it would be an impossibility for any large number of men to return from the various camps and cantonments at one time, the committee decided that it would put the funds which had been gathered into the hands of the superintendents of the factories represented, that they might act as trustees.

A considerable sum of money already is in the hands of the committee, and additional amounts are being received. The trustees are Walter Clark of the American Hard Rubber Co., Harry Kleinert of the Kleinert Rubber Co., and Felix Schwemer of the Traun Rubber Co.

The funds are to be used by the workers' committee to promote comfort and happiness among the men from College Point who are in the Army and Navy of the United States. They will be employed to make easier the lot of any who may be taken prisoners of war, and the sick and wounded will be ministered to by means of them.

Not only the soldiers themselves, but also those dependent upon them will be cared for if the necessity arises. In short, the work of the organization will be a labor of love and mercy, to show the men in the field that they are ever in the hearts of those who remain at home.

National Automobile Show

Latest news from the management of the automobile show to be held at the Grand Central Palace, New York, Jan. 5-12, shows that in spite of the disheartening reports from Washington on the curtailment of pleasure car production, interest is daily increasing. Up to date, ninety-five car manufacturers and 245 accessories manufacturers have been allotted booths.

Rubber Workers Subscribe to Y. M. C. A.

An enthusiastic meeting was recently held at the plant of the Peerless Rubber Works, North Bergen, N. J., at which time over $1,000 was subscribed to the Camp Comfort Fund of the Y. M. C. A. E. H. Pendleton, superintendent, was chairman of the North Bergen committee.

Majestic Rubber Co. Moves

The floor space of the Majestic Rubber Co., Akron, Ohio, has been tripled as the result of the removal of the company from 46 East South Street to 901 South High Street, just around the corner from their old location. Considerable new equipment has been added and the company will be greatly facilitated in putting out a large quantity of rubber goods of all varieties.

U. S. Rubber Co. Has 1544 in Service

Fifteen hundred and forty-four men have gone from the various departments and subsidiaries of the United States Rubber Co. into the service of the country.

In token of that fact a mammoth service flag has been hung from the Broadway side of the United States Rubber building in New York. This flag is 20 by 12 feet and its white quadrangle on the red field is dotted with 1544 blue stars. Almost every department and subsidiary have contributed their quota to this aggregate of more than a thousand and a half employes who have answered the nation's call to arms. They have flocked to the colors alike from the ranks of the presidents, directors, managers, superintendents, salesmen and office and factory hands. Many have received commissions. It is said that the record of 1544 men in the Government's service surpasses that of any other private corporation in the country.

United States Rubber Co.'s Service Flag

Katzenbach & Bullock Opens 'Frisco Office

In order to better serve their Pacific Coast trade, the Katzenbach & Bullock Co. has established its own offices in the Monadnock Building, San Francisco, Cal. They will be under the management of W. C. Todd, who is so well known in the trade as to require no special introduction.

This expansion is in line with the progressive policy of this company, which in less than ten years has developed into one of the largest manufacturers and dealers in chemicals and colors in America, and has earned for itself an enviable reputation in the trade. K. & B. service now spans the continent with offices in Boston, New York, Trenton, Chicago and San Francisco, and warehouse stocks at other important industrial centers.

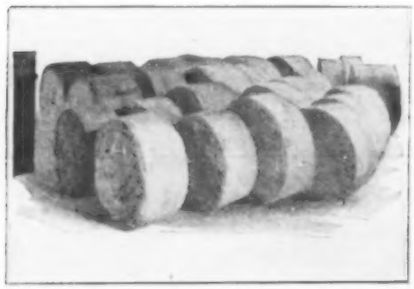
Plymouth Plans New Factory

The Plymouth Rubber Co., whose factory in Stoughton, Mass., was recently destroyed by fire, will not rebuild in that location. At present the company is filling orders from its Chelsea, Mass., factory, but is not able to expand rapidly enough to fill all the orders on hand. Several factory sites are now being considered by the company and it is expected that a new factory will soon be under construction.

Large Shipment of Belting

The illustration on this page shows a single order for belting, shipped by the Boston Belting Co. from Boston, Mass., to the Burma Mining Corp., Tawng Peng, via Rangoon. The belting was consigned to the Bawdin Mines, and is for use with ore-conveying and elevating machinery.

Before the shipment, which weighs twenty-two tons, reaches its destination, it will have traveled about 18,000 miles, or about three-quarters of the distance around the earth.



RUBBER BELTING SHIPMENT TO TAWNG PENG

This order, comprising complete belting equipment for the mines, is interesting inasmuch as it indicates the reliance placed by foreign purchasers in the products of American factories.

Rubber Stock Brokers Arrested

It is reported that, following an investigation extending over several weeks, post office inspectors conducted a raid upon the offices of Warren C. Daniel, Inc., stock brokers, 220 West Forty-second street, New York, and arrested Mr. Daniel, the head of the company, and Raymond N. Bond and H. P. Dowst, stock salesmen. The men arrested are accused of using the mails to defraud by selling stock of the Alliance Tire & Rubber Co.

Motor Accessories Chain Stores

The motor accessories business of the country has long been in a chaotic condition because up to this time no concentrated attempt has been made to raise it to the standard which it deserves. Prices and services vary with the inclination of the individual store owners and as a consequence there has been no attempt at national standardization. Now a new company, called the Motor Accessories Corp., has been organized and is endeavoring to operate a chain of stores, over the entire country, at each of which the prices and materials will be standard.

This company has issued a prospectus setting forth its aims and it is proposed to have one branch in each state in charge of a branch manager who will also have jurisdiction over a chain of stores, called stations, to be operated in all cities of that state. These stores will not be owned by the company, but the owners must become stockholders in the company.

A full line of motor accessories, including tires, will be carried in all stores, and the stations will do their ordering through the branch in their state. This will save freight bills for the stores and will obviate the necessity of hauling the supplies long distances from the factory. A line of accessories will eventually be manufactured by the company under the trade mark Maco, but until the time that this is accomplished only standard and reliable advertised articles will be carried.

The trade mark adopted by the Motor Accessories Corp. is a double arrow, which will be prominently displayed on each store and every highway in the country. A monthly house organ is issued for the benefit of the stores and salesmen. Price cutting will not be permitted, and each station will have exclusive selling rights in its city for the Maco products. Each year a convention will be held, at which two representatives from each state will attend.

H. F. Vortkamp, Jr., is president of the corporation. Mr. Vortkamp was connected with Mr. Ford in Detroit, where he studied all the Ford methods of standardization, which he has applied to his new venture. The company maintains main offices at 170 Broadway, New York City.

Rubber Industry at Hotel Men's Exposition

The rubber industry was well represented at the Second National Hotel Men's Exposition held recently at the Grand Central Palace in New York, and was probably the greatest event in the history of the American hotel business.

Among the most attractive exhibits at this show were those of the Miller Rubber Co., Akron, Ohio, and the Peerless Rubber Manufacturing Co., New York. The exhibit arranged by the Miller Rubber Co., was very attractive. The display consisted of rubber advertising devices, toy balloons, sponges, water bottles and other rubber sundries.

PEERLESS RUBBER MFG. CO.'S EXHIBIT

The exhibit of the Peerless Rubber Manufacturing Co., covered an entirely different field, and was composed of rubber floor coverings, mats and tilings, rubber granite, marble and marquise cleaners, and various other items of rubber mechanical goods of interest to hotel people.

DISPLAY OF THE MILLER RUBBER CO.

New German Rubber Bomb

Recent dispatches from the fighting front tell of a new rubber-based bouncing bomb recently used by German aviators. The bombs are provided with a resilient base of leather, rubber and rope, which makes them bound upward into the air after striking the ground. The special fuse attached causes the bomb to burst when it has reached the pinnacle of its bound, about six feet in the air.

Butts of these aerial bombs which have been picked up show that all are provided with a base of synthetic rubber and are wrapped around and around with rope, making them resilient.

The bombs are weighted so that the end with the rubber pad will strike the ground first. The impact with the earth sets in motion the time fuse, which detonates the bomb in a fraction of a second later when the bomb has bounded into the air.

News from the Rubber Metropolis

Firestone Entertains Rubber Association Members—Goodrich Men Enlist—Huge Goodrich Flag—Diamond Rubber Treasurer Honored—Goodrich Treasurer Establishes New Bank—Vice-President Litchfield Donates Boy Scout House

Firestone Entertains Rubber Men

(*Special Akron Correspondence.*)

At the invitation of H. S. Firestone, president of the association, about forty of the most prominent men in the rubber industry recently met in Akron and spent a very pleasant week-end. They were members of the standing committees and board of directors for the past two years of the Rubber Association of America.

The guests and a large number of the leading business men and bankers of the city were banqueted at the Akron Country Club. A trip through the Firestone factory was also made.

At the banquet, talk soon turned to a discussion of the present industrial problems of the country and finally drifted into a discussion of our preparations for war and the help that manufacturers can give the Government in a vigorous prosecution of the war.

Mr. Firestone acted as toastmaster. C. A. Raymond and F. A. Seiberling were two of the speakers and they gave a history of the rubber industry in Akron. F. H. Gohh, president of the Cleveland Trust Company, recently returned from Washington, spoke on the preparations still necessary before we are ready to make ourselves felt in the world war. W. J. Kelly, New York crude rubber broker, also made an address.

Edgar B. Davis, managing director of the United States Rubber Company, advocated the manufacture of large quantities of airplanes in order to win the war and proposed the following resolution:

"Resolved, That this Association appoint a committee to study and determine how the Association can best assist the Government in the war, particularly how to bring about the construction and utilization of air craft in overwhelming numbers at the earliest possible date and to act in accord with any conclusion it may reach, to the end that the present horrible war against civilization may be ended by the complete victory of the Allies in the shortest possible time, and thereby maintain for ourselves and our posterity the principles of human liberty."

Rutherford Handles Y. M. C. A. Fund

(*Special Akron Correspondence.*)

In addition to acting as general sales manager for Goodrich, W. O. Rutherford has made a reputation for himself by the whirlwind way in which he handled the recent raising of $125,000 for the national Y. M. C. A. fund in Akron. Under Rutherford's direction Rubber City workers overshot the mark by $30,000.

Large Number of Goodrich Men Enlist

(*Special Akron Correspondence.*)

E. P. Rowen, manager of the Chicago branch of the Goodrich Co., has had to reorganize his staff almost completely. Forty-one men have joined the colors and there are still a few left who are of draft age.

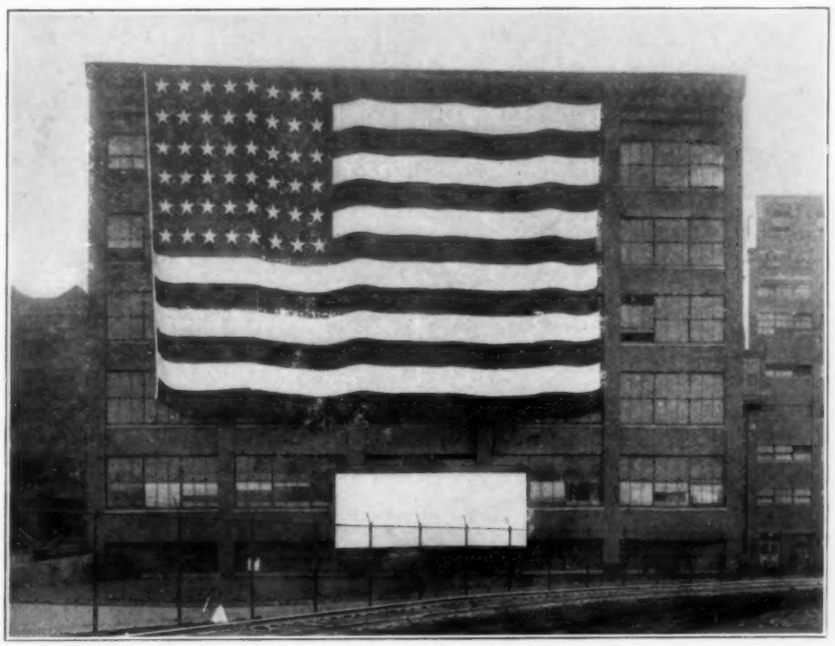
Goodrich has contributed many fighters to Uncle Sam. In the Akron factory alone 631 men have enlisted. Many are already in France, the others in training camps. Other branches have also suffered heavily. Several managers have resigned and entered the Army.

At the request of the Government, the truck tire department trained employes for service in the motor division of the Army and they have since been commissioned.

Huge Goodrich Flag

(*Special Akron Correspondence.*)

The huge American flag, which was first unfurled at the Goodrich Athletic Field in May, is now suspended on the boot and shoe building facing the center of the town.



LARGE FLAG ON GOODRICH BUILDING

It is claimed that this flag, purchased by subscriptions of Goodrich employes, is the largest in the world. It is raised each morning and taken down at sunset.

Noah on Exemption Board

(*Special Akron Correspondence.*)

A. H. Noah, former treasurer of the old Diamond Rubber Co., has been named by Governor Cox of Ohio to succeed C. L. Knight, an Akron publisher, on the District Draft Board of Appeals No. 1. The board handles appeals from local boards in twelve Ohio counties and has jurisdiction in claims for exemption on industrial and agricultural grounds. The board meets daily at Canton, Ohio.

Rubber Companies Transport Employes

(*Special Akron Correspondence.*)

Akron has just successfully weathered a street-car strike. The car operators were out five days, completely tying up the city and interurban lines.

During the tie-up the big rubber companies detailed their fleets of trucks to every part of the city and thus succeeded in getting their employes to and from work in time for all shifts.

Brown to Open New Bank

(*Special Akron Correspondence.*)

Akron is to have a new Morris Plan bank with a capital of $100,000. It was incorporated recently by L. D. Brown, treasurer of the B. F. Goodrich Co. and formerly cashier of the First-Second National Bank here. Its object is to make borrowing easy for the small borrower. It has the backing of men highest up in Akron's industrial world.

Tire Thief Sent to Prison

(*Special Akron Correspondence.*)

Ray Lynch, a witness in the case of George Miller, who is now on trial in Akron for receiving stolen property, described in court how tire thefts had been carried on at the Goodrich plant. Lynch is now serving a reformatory sentence for the stealing.

He was accustomed to wrap half a dozen inner tubes about his body under his clothes and thus smuggle them out, he said. The casings he placed in boxes, covered them with paper and carted them out by way of a freight tunnel.

Litchfield Donates Boy Scout House

The dedication of the new Boy Scout House, known as "Litchfield Lodge," was one of the recent important events of Akron. The building is the gift of P. W. Litchfield, vice-president of the Goodyear Tire & Rubber Co., and the site was donated by the company itself. Men of distinction from every walk of life were present and joined heartily in the sports of the boys and in the time honored game of "Leap Frog," with plenty of variations to add to the enjoyment of the occasion. The ceremonies were conducted under the direction of the National Boy Scout Headquarters located at New York.

Food Conservation at Goodyear

To aid in conserving the nation's food supply, the Goodyear Tire & Rubber Co., Akron, Ohio, has instituted meatless Tuesdays and wheatless Wednesdays, in the company's three large restaurants.

Dayton Doubles Its Capacity

The capacity of the new plant of the Dayton Rubber Mfg. Co., Dayton, Ohio, has been doubled and the plant was ready for occupancy in October. The company has been gradually supplementing its sales force, and with the opening of three new branches will employ fifty or more additional salesman during the coming season. Other branches in principal cities will also be opened.

Firestone Branch Moves

Firestone Tire Service Co., Dallas, Tex., has moved into its new building, 2015 Main Street.

With Men in the Trade

Prominent Rubber Man

The success of William Wallace Wildman of the Portage Rubber Co., Barberton, Ohio, is reflected in his rapid promotion to treasurer and general manager of the company. Few in the rubber industry can claim the rapid rise of Mr. Wildman and his success is due to his ambitions and great ability. It was he who gave to the rubber metropolis both the United Rubber Works and the Portage Rubber Co. and placed them on the high level which they have reached.

Mr. Wildman was born in Zanesville in 1872. His father, John B. Wildman, came to this country from Ireland when he was

W. W. Wildman

only a few years old and moved to Zanesville after residing in New York City for a short period. Later he moved to Chicago.

The Wildman family is prominent in the history of the Portage Rubber Co. and to this day has a direct interest in the business. Mr. Wildman's sister, May W., is the wife of L. E. Larson, secretary of the company. A brother, Banks J. Wildman, was recently made president and treasurer of the Portage Rubber Co. of California. Two other brothers, Joseph W. and Theodore Thomas, are, respectively, manager of the Chicago branch and sales manager of the company.

After completing his high school education Mr. Wildman became connected with his father's store and later was admitted to membership in the firm. Following this he worked for Marshall Field & Co., the National Tube Works and James B. Clowe & Sons, all of Chicago.

In 1906 Mr. Wildman entered the rubber field and was made assistant superintendent of the mechanical goods department in the Chicago plant of Morgan & Wright Co. He later became their mechanical goods sales manager. When Morgan & Wright changed hands Mr. Wildman identified himself with the Milwaukee Rubber Works, which was later taken over by the Federal Rubber Co. Here he was general manager and superintendent.

However, it was not until early in 1909 that Mr. Wildman, by this time assured of the future of the rubber industry, went to Akron. While there he developed and patented a process for the reclaiming of rubber and organized the United Rubber Co., of which he is now treasurer and general manager. From the start this company has been a success and it has been due in great part to Mr. Wildman's efforts. The plant has been running day and night practically ever since it was started and bids fair to continue in the same way.

When Mr. Wildman engaged in the rubber reclaiming business it was with the idea that a separate company would later be formed to manufacture finished rubber goods. Thus he brought about the organization and incorporation, in 1910, of the portage Rubber Co. He was general manager from the start and was later chosen treasurer.

The first automobile tire was manufactured by it in Oct., 1911, and since that time the business has expanded very rapidly, so that now Portage fame is world-wide. From time to time large additions have been made to the plant to accommodate the growth. The stock of the company is soon to be increased to $10,000,000.

Mr. Wildman is a members of the Akron and Barberton Chambers of Commerce and the Akron City Club. He married Miss Della Thompson of Dayton, Ohio, and has one child, William Thompson.

Casper Smith Now in New York

Casper Smith, for several years manager of the Chicago office of the Katzenbach & Bullock Co., manufacturer and dealer in chemicals, colors and fillers for the rubber industry, has been transferred to the New York branch, where he will be in charge of sales. Calvin Stitt, formerly Boston manager of the Katzenbach & Bullock Co., has taken over the management of the Chicago office.

Siegerson with McGraw Co.

Edmund B. Siegerson, formerly branch manager at Albany and Buffalo, N. Y., for the Goodyear Tire & Rubber Co., and later supervisor of sales promotion through the Middle West, has accepted the position of sales promotion manager for the McGraw Tire & Rubber Co., with headquarters at East Palestine, Ohio.

J. H. Diehl Made a Mason Director

John H. Diehl has been elected a director of the Mason Tire & Ruber Co., Kent, Ohio, and will add his wide experience to the direction of the affairs of that corporation. Mr. Diehl is also sales manager of the company.

The new director has had a wide experience in the tire business, from his start with the B. F. Goodrich Co. through every phase of the selling end to his association with the Portage Rubber Co. as sales manager for five years, culminating in his association with the Mason Tire & Rubber Co.

Marathon Changes

Pierre Blommers, who has been manager at New York for the Marathon Tire & Rubber Co., has been appointed to the position of special factory representative, with headquarters at the home office, Cuyahoga Falls, Ohio.

P. L. Niles, formerly western manager for the Republic Rubber Co., at Kansas City, has been made manager of the Marathon's New York Division, in place of Mr. Blommers.

E. W. Feist Dead

Emil W. Feist died in Pottstown, Pa., on Nov. 6, at the age of sixty-four years.

Mr. Feist was born in New York City and for many years was active in politics in Brooklyn. He was cashier of the National Rubber Co., New York.

New Portage Manager

G. H. Kiley has been made manager of the New York branch of the Portage Rubber Co., succeeding W. M. Ducette.

Platt Made Manager

A. L. Platt has been appointed manager for the B. F. Goodrich Rubber Co., Dallas, Tex. He succeeds P. H. Dingle, who has gone to Kansas City.

Broering with Mason

Lawrence Broering has been added to the sales force of the Mason Tire & Rubber Co. His headquarters will be in Chicago.

E. I. Cooper Enlists in Aviation

E. I. Cooper, who has been with the National Rubber Co., Bristol, R. I., for several years, and who until recently was overseer of the packing and other departments, has enlisted in the Aviation Section. His place is filled by Ralph W. Holt, who has also been with the company for some years.

Hatch to Leave Seamless

A. L. Hatch, who has been with the Seamless Ruber Co., New Haven, Conn., for the past sixteen years, announces the severance of his connection with that well-known concern to take effect on Jan. 1, 1918. For the past ten years Mr. Hatch has been the eastern sales manager of the Seamless Co., with headquarters in New York City, having charge of the territory east of Chicago. He was the first man to establish agencies for the "Kantleek" line of druggists' sundries when it was placed on the market.

Mr. Hatch has a large circle of friends throughout the rubber trade and especial-

A. L. Hatch

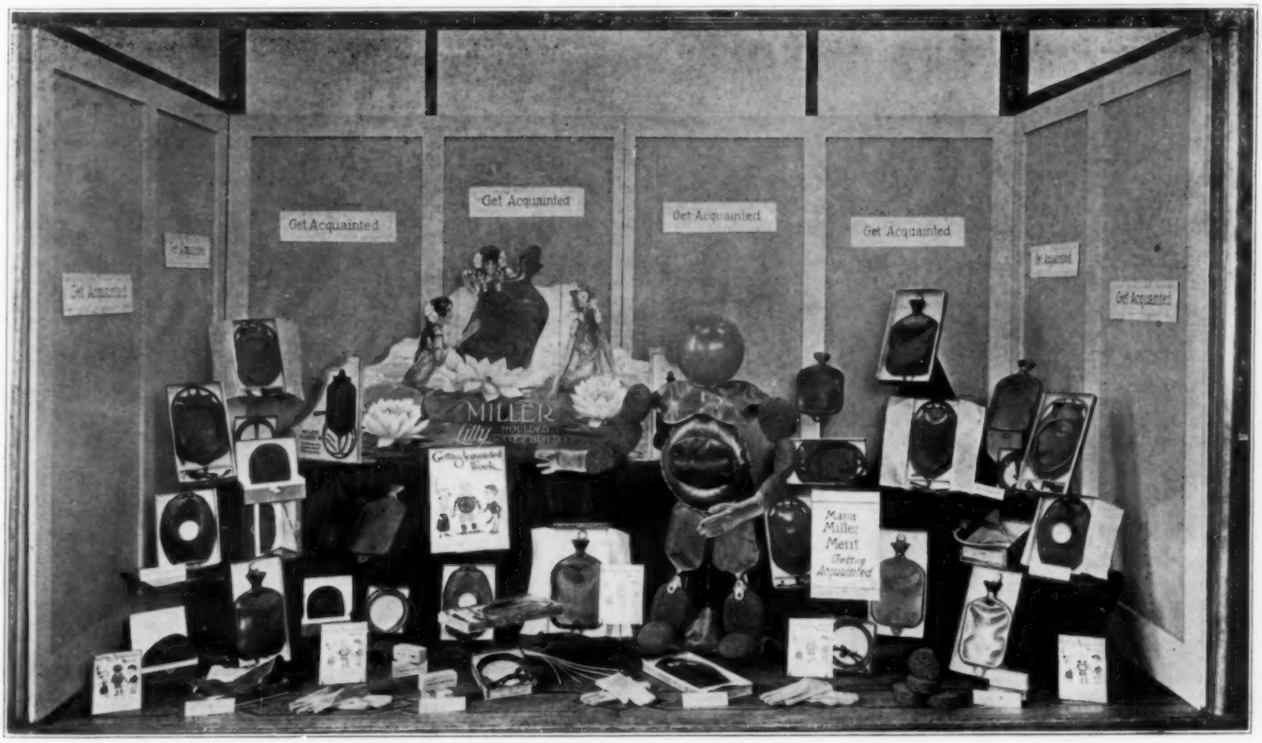
ly among the large firms dealing in druggists' sundries in Greater New York territory, where he has been doing a large volume of business for the Seamless Rubber Co.

Two Attractive Window Displays

Every month the Miller Rubber Co. of Akron, Ohio, sends to its dealers suggestions for window displays together with explanations as to the best manner of carrying them into effect with the least amount of trouble and with the greatest probability of securing good results. At the same time, if any special background or signs are used in the arrangement of a display, they are forwarded under separate cover by express to the dealer.

In the two illustrations on this page are shown two "windows" which have proved to be effective business boosters for dealers in Miller products.

In addition to the attractive arrangement of the several rubber articles, there is to be noted in each case the central figure made up of the goods with which it is surrounded. Dubbed on the introductory placards as "Mr. Miller Merit" in one case and as "Major Miller Merit" in the other, these ingeniously constructed manikins seem to fulfill two of the primary requirements of effective displays of this kind in that they attract attention of passers-by, first to the windows, and second to the goods, and therefore, wherever used they should prove to be successful though silent salesmen.



War Activities at the National Capital

Control of Imports Effective in Bringing Hostilities to Successful Conclusion —Motor Trucks a Factor in Relieving Railroad Congestion— Western Railroads Want Freight Rate Increase— Government Price Control

Export Control War Board

The control of imports by the United States Government about to be made effective will not only assist in the prosecution of the war to a successful conclusion from the economic point of view, but eliminate for all practical purposes foreign regulation over commodities absolutely indispensable to American industries.

Import control was recognized by the belligerent countries in the early stages of the war as a military and economic necessity, and reached its highest form of development in the case of Great Britain, which created a highly efficient mechanism designed to conserve crude and manufactured products for strictly British and Entente requirements, and at the same time to prevent such products from becoming available to the Teutonic allies. The other countries of the Entente also imposed restrictive import measures in one form or another, all designed to add to the efficiency of their economic and industrial systems.

The commanding position of the United States, however, as the chief source of supplies of all kinds for the Entente, led Great Britain to make liberal provision for the entry into this country of the raw materials from British territory essential to turning out the finished products necessary for the complete equipment and maintenance of the armies in the field.

British Restrictions

Accordingly, for the two-year period preceding the entrance of the United States into the conflict last April, American importers were allowed to enter commodities under the strictest sort of British control with binding guarantees that manufactured products made from crude materials originating in the British dominions, colonies, and territories would not be exported to the Central Powers or their allies, or even reach enemy countries indirectly.

While American importers and manufacturers accepted the situation brought about by British control of imports here as the only solution open under the circumstances, the searching inquiry made by Great Britain into individual transactions involving prices paid and other details, as well as data of a confidential character dealing with the export of finished products, aroused much dissatisfaction. With the United States a belligerent this foreign control will soon be a thing of the past, since this country is now in a position to see to it that nothing of value will be allowed to reach the common enemy.

The United States in Charge

In the last few days, the United States has taken the preliminary steps to relieve Great Britain of the task of supervising imports received here from British sources, while through the embargo machinery safeguards are thrown around the possibility of manufactures being sent overseas where they might prove of benefit to Germany or her allies. Thus, this country's control of both imports and exports has been made ready to work harmoniously as an economic factor in the struggle against the Central Powers.

Dr. Edward Ewing Pratt, who recently resigned as chief of the Bureau of Foreign and Domestic Commerce, in discussing the import supervision, maintained that the creation of the War Trade Board will properly take over the control of a large part of the exports of the United States. He went on to show how exports of any kind were prohibited to certain of the European countries and how exports of certain articles of commerce were prohibited to all countries.

Dr. Pratt explained how the remarkable control established by Great Britain for such raw materials as wool, tin, jute, rubber, mica, and other products caused such organizations as the Textile Alliance and the Rubber Association of America to act as clearing houses for jute, wool, burlap and rubber which was to be exported to the United States from Great Britain.

In regard to these organizations Dr. Pratt said: "It is not contemplated, I believe, for the Bureau of Imports to take over the work now being performed by the Textile Alliance or the Rubber Association of America. Both of these organizations, instead of reporting to Great Britain, will be expected to report to the United States. The other commodities which are of less importance in point of quality, perhaps, will be taken in charge of by the Bureau of Imports, and new organizations similar to the Textile Alliance and the Rubber Association of America will be formed. Some such organizations have already been formed.

"Similar organizations were set up in the case of other raw materials, notably the Rubber Association of America, which controlled all rubber imported from British possessions into the United States. Their powers were similar to the powers given to the Textile Alliance. In the case of other raw commodities that were, perhaps, not quite as important as wool and rubber the control of the imports was given to the British Consul in New York."

Transport Committee Meets

The possibilities of cooperation with the railroads through greater use of motor trucks and horse-drawn vehicles, for relieving congestion in freight houses and releasing cars in the larger cities, was discussed at the first meeting of the newly appointed Highways Transport Committee of the Council of National Defense.

The great utility of motor trucks for carrying freight short distances, and keeping certain classes of freight out of the railroad terminals, will be matters for recommendation by the committee. The efforts of the committee will also be directed toward eliminating as much as possible the present waiting time of trucks and drays at terminals, owing to their inability to receive or deposit freight rapidly.

Railroads Urge Freight Rate Increase

For the purpose of urging a general freight increase similar to that now sought by the eastern lines, western railroads will appear on Dec. 17 before the Interstate Commerce Commission. It is claimed by the eastern roads that despite an increase of $154,336,000 in value of traffic for the year ending June 30, 1917, the net income from operations decreased $44,906,000. Of the $270,000,000, estimated advance in operating expenses over 1916, 37.8 per cent. is for increased wages.

According to the chairman of the Railroads' War Board, investigations conducted by the Baltimore & Ohio Railway and other roads, affecting the movement of freight, show that 37 per cent of time is spent in hands of shippers, only 11 per cent in actual motion, and 52 per cent at terminals, sidetracks and repair shops.

The announcement is made that the Council of National Defense has appointed a Highways Transport Committee to encourage the use of roads and waterways for the purpose of relieving the war burdens of the railroads.

HEADQUARTERS OF THE COUNCIL OF NATIONAL DEFENSE

Photo National Photo Co.

Government Price Control

In drawing conclusions from the results thus far of what the Government is doing in regard to price control and distribution, a war bulletin issued by the committee of the Chamber of Commerce of the United States cooperating with the Council of National Defense declares there should be a clear understanding of the nature of the legislation and gives the following purposes: 1. To enable the government or the public, or both, to purchase at prices below those established by market conditions. 2. To substitute for the ordinary method of distribution by price a method of distribution of product on a basis of the country's requirements in connection with the prosecution of the war. 3. To prevent the making of large profits out of the war and thereby, among other things, eliminate a cause of great discontent on the part of labor.

American Rubber Patents

ISSUED NOVEMBER 6, 1917

1,245,160—To Daniel C. Mulvihill, Hannibal, Mo. Automobile lifting-jack.

1,245,213—To John R. Gammeter, Akron, Ohio, assignor to the B. F. Goodrich Co., New York, N. Y. Tire-calipers.

1,245,217—To Felix Gottschalk, Hilton, N. J. Ear tube.

1,245,232—To Charles A. Hoskins and John L. Metier, Drakes Creek, Ark. Tire Shield.

1,245,296—To Elmer A. Wilson, Portland, Ore., assignor of one-third to F. C. Brocker, Portland, Ore. Resilient tire.

1,245,335—To Edward Jacob Hahn, Merrill, Iowa. Detachable tire.

1,245,413—To John F. White, Pittsburgh, Pa. Cushion-tire for vehicles.

1,245,444—To Frank J. Creque, Cuyahoga Falls, Ohio. Toy balloon.

1,245,496—To William J. Nesbitt, Los Angeles, Cal. Heel-cutting apparatus.

1,245,524—To Grover T. Stott and Thomas J. Heafey, Springfield, Ohio, said Stott assigner to said Heafey. Inner tube for tires.

1,245,534—To Jay E. Traver, Naugatuck, Conn., assignor to the Goodyear's Metallic Rubber Shoe Co., toe portion of boots and shoes.

1,245,700—To William C. Geer, Akron, Ohio, assignor to the B. F. Goodrich Co., New York, N. Y. Compounding of rubber.

1,245,838—To Harry B. Wallace, St. Louis, Mo. Method of making tires.

1,245,859—To Grover C. Berryman, Los Angeles, Cal. Method of making tubes for automobile tires.

1,245,898—To William Ross Gates, Providence, R. I., assignor to Revere Rubber Co. Die for tire-tubing machines.

ISSUED NOVEMBER 13, 1917

1,246,050—To Newton D. Chase, Hornbrook, Cal., assignor of one-half to Frank Frame and Arthur Thomas, Hornbrook, Cal. Tool for removing and replacing vehicle-tires.

1,246,131—To George F. Marston, Pomona, Cal. Combined tire-valve and pressure- governor.

1,246,192—To Eugene Von Vzrgyas, Washington, D. C., assignor by mesne assignments to Jacob G. Keener and E. R. Shupe, trustees. Rubber compound.

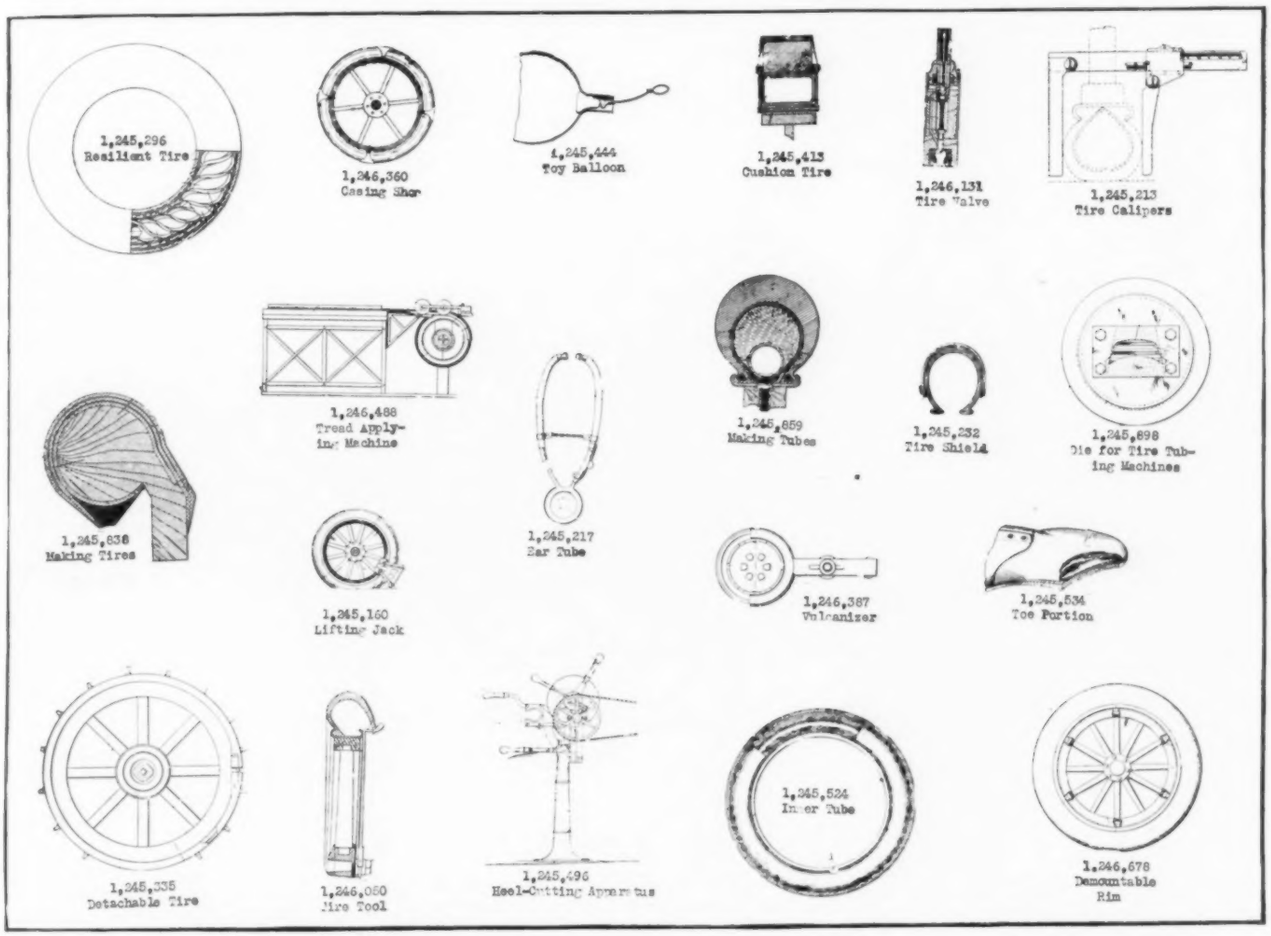
1,246,360—To Frank Tuttle and Lewis T. Hall, Houston Heights, Tex.; said Tuttle assignor to said Hall. Casing-shoe.

1,246,387—To Rufus C. Boldry, Oskaloosa, Iowa, assignor to Harry E. Davis, Oskaloosa, Iowa. Vulcanizer.

1,246,488—To John L. Swartz, Akron, Ohio. Tread-applying machine.

1,246,678—To John B. Stroud, Paris, Tex., assignor of one-fifth to G. B. Evans, Dallas, Tex. Demountable rim.

1,246,736—To Walter Frank Frosell, Wyo. Auto tire.



Recent Incorporations

Tropical Rubber Co., Wilmington, Del.; capital, $400,000; to manufacture rubber tires, etc.; incorporators: C. M. Rimlinger, M. M. Clancy and Clement M. Egner.

Crown Raincoat Co., New York City; capital, $21,000; incorporators: B. Willis and M. and S. Lustig, 129 E. 119th Street, New York City.

Columbia Tire & Rubber Co., Dover, Del.; capital, $1,500,000; incorporators: A. M. Halloran, S. A. Williams and Ferris Giles, Wilmington, Del.

Union Tire Co., West New York, N. Y.; capital, $6,000; incorporators: Emma Tilfenbronner, Catherine E. Weber and Henry B. Fischer, all of Guttenberg.

Imperial Tire & Rubber Co., Dover, Del.; capital, $200,000; deal in rubber goods; incorporators: H. Nelson, I. S. Shubert and V. T. Casson, all of Philadelphia, Pa.

Rochester Tire & Rubber Co., Dover, Del.; capital, $500,000; to manufacture automobile tires; incorporators: E. H. Crowder and H. J. Crowder, Buffalo, N. Y., and Dr. Ernest W. Ewell, Lancaster, Pa.

Improved Rubber Co., Bayonne, N. J.; capital, $100,000; to manufacture rubber goods; incorporators: A. A. DeBonneville, Bayonne, and A. S. Perry, Brandford, Conn.

St. Louis Perfection Tire Co., Dover, Del.; capital, $75,000; to manufacture automobile tires; incorporators: C. I. Rimlinger and F. A. Armstrong, Wilmington, Del., and Clement M. Egner, Elkton, Md.

Endurance Tire & Rubber Co., Dover, Del.; capital, $5,000; incorporators: C. L. Rimlinger and F. A. Armstrong, Wilmington, Del., and Clement M. Egner, Elkton, Md.

Fidelity Tire & Rubber Corp., Trenton, N. J.; capital, $5,000.

Mercury Tire Co., New York; capital stock, $5,000; incorporators: E. Salisbury, M. M. Burnet and P. J. Osborn, 181 Pearl Street, New York.

Bull's Eye Rubber Co., Queens, N. Y.; capital stock, $250,000; incorporators: A. C. Squires, E. C. Tengzelius and J. Futoransky.

News of the Dealers

Swift Tire Repair Co., Detroit, Mich., has opened for business at 1296 Mack Avenue.

Michigan Tire Co., Grand Rapids, Mich., is erecting a new building of brick, five stories high.

Charles T. Wilson, proprietor of the Manhattan Auto Tire & Vulcanizing Works, has changed the style to the C. T. Wilson Tire Co. The business has been moved to a new building with double the former floor space.

Tri-State Tire Co., Portland, Ore., has opened offices at 72 Sixth Street, under the management of W. L. Bartlett. The company handles Perfection tires.

A. H. A. Tire Exchange, Denver, Colo., is a new tire and repair concern at 19 East Thirteenth Street.

Carter Vulcanizing Co., Columbus, Ga., is now in its new quarters on Broad Street. Additional machinery and equipment have been installed.

James J. Grant Tire & Rubber Co., 723 South Olive street, is one of the new concerns at Los Angeles, Cal.

Reviews of New Books

SELLING POINTS OF HUNDRED-POINTERS—Edited by E. D. Gibbs, General Sales Manager of the Endurance Tire & Rubber Co., New Brunswick, N. J.; published by R. D. Gibbs Co., 641 Eighth avenue, New York. 95 pages. Price $2.00.

"A hundred-pointer man is one who is true to every trust; who keeps his word; who is loyal to the firm that employ him; who does not listen to insults nor looks for slights; who is polite to strangers, without being "fresh," who is considerate toward servants; who is willing to learn; who is cautious yet courageous."

"Hundred-point men may vary much in ability, but this is always true, they are safe men to deal with."

This book is different from other books on selling. It does not contain the theories or suggestions of any one man, but is a collection of practical talks and arguments, of which the above are samples, dealing with the education of salesmen and the sale of merchandise. It is in two parts:—the first, Getting Ready; the second, Getting the Order, to which are added many pithy pointers.

DYKE'S AUTOMOBILE AND GASOLINE ENCYCLOPEDIA. By A. L. Dyke, E. E. A. L. Dyke, St. Louis. (896 pages, cloth bound. $3.)

The sixth edition of this comprehensive automobile encyclopedia has been entirely rewritten with many new subjects treated and new illustrations added. It contains almost 900 pages of information of inestimable value to motorists, auto and tire repairmen and students.

The book is prepared with the idea of presenting the principle upon which gasoline engines and automobiles are built and operated, and to explain in detail all that an operator must understand in order that he may operate and care for any make of car. No attempt is made to treat the subjects from a theoretical, but rather from the practical standpoint.

The various instructions are logically arranged beginning with illustrations and descripticns of the early type of cars in order that the modern details and refinements may be more readily understood. The beginning of the book is given over to an analysis of engines, carburetion, cooling and lubrication, and ignition and electric systems. Following this the operation and care of cars are treated and a summary of tables and specifications is given. Over 150 pages are devoted to the study of repairing and adjusting, making a complete summary of the best methods in vogue at the present time.

A most interesting section of the book shows the development of pneumatic tires and tubes and the methods of repairing them. Twenty-seven pages and 180 illustrations serve to present this subject in its various phases. The purpose of pneumatic tires, their construction, inside and surface, and the methods of applying them to wheels are explained. Inner tubes are treated in a clear manner with illustrations to show their construction and the details of the valve. The various types of rims are given, showing the classes into which they are divided and the adadvantages of each. A summary of sizes, air pressures, oversize tires, metric equivalents and carrying capacities of the various sizes completes the pneumatic tire section.

Types of solid tires, with their sizes and the loads they are designed to carry are presented in the solid tire section along with various novel tires and accessories.

The next section considers the repair and adjustment of tires and tubes and shows the construction of tires, their care and the causes of and remedies for tire troubles. Practical methods of retreading, filling cuts, and preventing blow-outs are clearly explained. The causes of troubles with tubes and methods of repairing them, besides numerous pointers in regard to getting extra life from both tires and tubes are given.

Undoubtedly this book will be a great aid to its readers for Mr. Dyke has brought together much valuable information which is hardly contained in any other book of like character.

HOW TO DO BUSINESS WITH RUSSIA—By Petersson and Steveni: Sir Isaac Pitman & Sons, Ltd., London and New York. (202 pages, illustrated).

The present war, which is devastating a considerable portion of Europe and exhausting the remainder, will for a time probably have the effect of closing the markets of Germany, Austria, and perhaps Turkey in Asia, to American commerce. It thus becomes more and more needful for American business men to be well informed on Russia and the vast field she offers to energy and money rightfully applied.

This book indicates the methods to be employed in order successfully to carry on trade with Russia, whose conditions and methods are very different from ours and from those of Western Europe.

Each district receives special treatment, and much space is devoted to giving practical advice on such matters as travelers and agents, banking facilities, conditions of credit, bills of exchange, catalogs, etc.

A perusal of this book will prove of great service to all who wish to open up commercial relations with Russia and Siberia, whose wealth is inexhaustible and whose possibilities are comparatively unknown.

CONDITIONS OF LABOR IN AMERICAN INDUSTRIES. By W. Jett Lauk and Edgar Sydenstricker: Funk & Wagnalls Co., New York (Price $1.75).

Amid the flood of books designed to promote the millenium, it is refreshing to find this one which is devoted to things as they are. It offers an incomparable starting point for efforts to make them as they ought to be. The authors are competent statisticians who have the happy thought of assembling the results of many recent investigations and putting them in orderly relation to each other.

The book is one of facts rather than of theories, although it is easy to see that the authors have some ideas of what use should be made of the facts. It considers, in a judicial spirit, wages and their adequacy or inadequacy; working hours and how these affect the work done; sanitary appointments and how the product of labor is affected thereby; employment, irregularity thereof and how the economics of business are affected thereby; unemployment and how this affects the rate of wages; the wage earner's family, etc. It is of particular interest to the reflective business man, the thoughtful working man, the social workers, who would understand social conditions; the trade unionist, who would know all the facts, and in general for all students of industrial problems.

This book makes a stronger appeal than many which consist of sentiment in greater proportion than fact.

Development of Rubber Machinery

In a recent talk at the Rotary Club of Trenton, N. J., John E. Thropp of the William R. Thropp & Sons Co., told of the company's progress in a speech on "Iron Products and Machinery as Used in Potteries and Rubber Mills."

Mr. Thropp gave a review of the progress that has been made in recent years along this particular line. For more than half a century, it was stated, mechanical and inventive ingenuity has been producing machinery for use in rubber factories. He referred to the first rubber mixers, of which there are many records, and then advanced to the next period in the business, when heavy wooden rolls were employed. He then described Edwin M. Chaffee's invention, the iron roll steam-heated rubber mixer and other innovations.

Mr. Thropp, after telling of many interesting phases of the progress of the business, referred to the fact that in 1836 was started the manufacture of the Brewster rubber mill machinery under the name of the Birmingham Iron Foundry and Machine Co. of Derby, Conn. In 1848 the Farrell Foundry & Machine Co. of Ansonia, Conn., was founded.

In 1860 the Phoenix Iron Co. of Trenton and at about the same time the Kelly Machine Co. of New Brunswick were founded. These concerns were all working on the lines of a quick heating and cooling roll, one that could obtain more speed and make a greater production per day, and at the same time use an economical amount of power.

In 1888, William R. Thropp, founder of the William R. Thropp & Sons Co., started the manufacture of rubber mill machinery. He conceived the idea of making a chilled iron hollow chambered, quick heating and cooling roll. He finally succeeded in making a roll that would mix rubber without injuring its nerve, and prevent vulcanization while being mixed.

Because of the failure of other machines to do the work properly, Mr. Thropp had considerable difficulty in getting his manufactured product installed in mills. However, he succeeded and the manufacturers found they were just what were desired.

Types of Machines Used

It was also stated that the William R. Thropp & Sons Co. is today making more than 300 different types of machines for rubber manufacturers. Not only are the machines adapted for rubber, but also for making phonograph records, rubber substitutes, chewing gum, linoleum, asbestos and a number of other products, foreign to the rubber trade. They make rolls to weigh as much as ten tons, and machines that weigh seventy-five tons. Some of these machines are driven by engine or steam power, others by motor or electrical power. The rubber mill machines today require safety appliances, which are fixed to stop the machine almost instantly in case of accident.

Today there are so many requirements in the manufacture of rubber products that the rubber manufacturers throughout the United States are specializing; therefore, a manufacturer of rubber mill machinery is compelled to build machines to meet the requirements of the rubber manufacturer. As an example, there are auto tires, tubes and accessories, footwear, mechanical goods, hose, drug sundries and hard rubber goods, all needing special apparatus.

Market for Manufactured Rubber Goods

NEW YORK, Nov. 23, 1917.

Generally speaking the market for manufactured rubber goods is strong, the demand being large for goods for immediate or early deliveries, and scarcity of merchandise ready for shipment being noticeable in many lines. Several large manufacturers report that their products are being taken up by customers as fast as they can turn them out. This state of affairs is probably due to the hesitation shown by buyers in past months. Conditions being uncertain many jobbers and wholesalers as well as dealers have been following a hand to mouth policy and now that the country has adjusted itself to some extent to war conditions they find themselves short of merchandise, on which they cannot get deliveries as rapidly as usual on account of the pressure of Government orders, the shortage of labor and scarcity of many materials.

The Government has not, comparatively speaking, placed a large volume of business direct with the rubber industry, but a considerable part of it comes from those who have different kinds of Government work under way.

MECHANICAL GOODS

Manufacturers of rubber mechanical goods are for the most part busy, but complain of labor shortage and the lack of certain materials, particularly of fabrics which it is practically impossible to buy at the present time. Prices continue to show an upward tendency in spite of the endeavor of manufacturers to keep values within certain limits where restriction of consumption will not be hastened because of the high price.

Many lines of mechanical goods are said to be growing scarce for quick delivery, and as there is a good demand for them prices are naturally running higher. The Government and concerns engaged in war work are absorbing considerable quantities of mechanical goods. On the other hand, construction work is being retarded throughout the country on account of the scarcity of building materials, and this has caused a falling off in the demand for rubber floor coverings and other rubber mechanical goods used by the building trades.

TIRES

Reports vary as to actual conditions in the tire trade. Manufacturers generally state that they have almost as much business as they can handle, and jobbers and dealers in agricultural and also in certain industrial districts report very satisfying business.

In the larger cities dealers find that there is a tendency to curtail tire expenditures, mostly by purchasing "seconds" and paying more attention to repairs. In New York the most active business appears to be done by dealers and jobbers in "seconds," many of whom report the best results in their history. Tire-repair men all say they have more work than they can handle.

All this appears to indicate a tendency to economize, but not to stop using motors for pleasure as well as for business purposes and is probably due more to the high cost of tires than to actual curtailment in the use of automobiles.

Generally speaking there is, no doubt, a falling off in the tire business, but this is always the case at this time of the year and it is, perhaps, too early to attempt to predict future conditions.

SOLES AND HEELS

The demand for substitutes for leather incidental to the enormous consumption and the decrease in the output of this commodity due to the war is making business good for many rubber manufacturers of soles and heels who, as a whole, report steady business with both the shoe repair and manufacturing trade.

FOOTWEAR

Rubber footwear manufacturers report that they are sold out on their production well into next year. The jobbing trade has been buying quite freely and reports that its advance business for spring is large and promises to hold. The probabilities are that next year will see a still greater popularity for canvas shoes with rubber and composition soles and heels than was witnessed last season.

Some footwear factories are busy executing large orders for arctics, rubber boots and waders for the American Army and Navy as well as for our Allies. These are rush orders, which are being given precedence over civilian business.

DRUGGISTS' SUNDRIES

Just now wholesale circles of the druggists' sundries business are rather quiet. However, this is not an unusual condition at this time of the year and the manufacturers already have in hand orders sufficient to keep them working to capacity for months to come. The Government and concerns, which have Government business, have placed large orders with druggists' sundries manufacturers. Some plants are said to be working to capacity on rubber dams, stomach tubes, surgical drains, hospital sheets and the like.

The jobbing and retail trade also have been buying heavily, their inventories having shown them that their stocks are low. There is a great demand for all sorts of rubber sundries for immediate and near deiiveries. Jobbers are said to be selling short on many staple lines. The average story is that they were restrained from buying for months by their merchandise managers and consequently their stocks have become very light.

The Fabric Market

NEW YORK, Nov. 23, 1917.

The raw cotton market during the past fortnight has turned quite strong, and a rapid advance has taken place. Quite a spurt was caused by the British victory at Cambrai, bullish ginning figures and increased activity in Liverpool, but the strength of the market is probably due more to Southern holding of spot cotton, and this situation may not be relieved for some time.

Whatever the crop may be, it is likely that there will be more than enough cotton, unless there is an immediate change in the war outlook, which does not seem probable. The cotton now being held will very likely some day be pressed for sale at lower prices than those now ruling.

EGYPTIAN COTTON

According to the latest reports from Alexandria, the Egyptian cotton crop promises to be very large. Picking has progressed satisfactorily.

No Egyptian cotton has arrived in this country in the last fortnight and the future of our supply of this staple still remains uncertain. However, the mill men are confident that some sort of an arrangement will be made to get sufficient quantities of Egyptian cotton to this side in time to cover their requirements.

SEA ISLAND

Net receipts at Savannah for the week ended Nov. 17 were 2314 bales, against 1735 bales last year. Net receipts to that date were 10,188 bales, against 28,895; sales, 2551 bales, against 2510. The stock on hand was 6520 bales against 10,518 last year, and exports to Northern mills amounted to 960 bales.

The Savannah market has been very active and prices have advanced to 74 cents first cost port for average Extra Choice. The interior has been turning loose only small lots at les than 75 cents, first cost.

It is reported that the Government is buying large quantities of Sea Island cotton. This probably indicates a demand for cotton for other purposes than those for which it was ordinarily used.

The indications are that the supply of Sea Island cotton will be equal to the demand.

YARNS

Cotton yarns are generally quiet, trading in them being materially restricted by refusal of buyers to pay asked price levels. There is a wide variance in quotations, yet many spinners who have been quoting lowest levels have advanced their prices, insisting that production costs are driving them to this. Buyers hesitate about buying at the present levels, but have to take yarn steadily to cover their presing requirements, and this demand is sufficient to make spinners independent.

FABRICS

Cotton fabrics are generally very strong and prices continue to move upward. Spot goods are very hard to get and consequently many contracts are being placed. Throughout the trade there is a growing feeling that provision must be made for a long war and a scarcity of many fabrics for manufacturing for the civilian trade is looked for.

TIRE FABRICS

There is nothing new in the tire fabric situation. The market is exceedingly strong and mill men show no marked desire to book orders.

The supply of Egyptian cotton in this country is growing very light and no means have as yet been found to replenish or replace it.

There is no lack of confidence in the future among the mill men, but they are not anxious to book orders they are not sure to be able to fill. They have plenty of cotton stored in Alexandria and can bring it over without delay as soon as cargo space can be secured for it.

HOSE AND BELTING FABRICS

Quotations on mechanical fabrics are purely nominal, for the mills have no goods to sell. The Government has taken over most of the heavy looms engaged in this line of manufacture, with the result that there are no mechanical ducks in the market, and there is real cause for anxiety for the future.

DRILLS, OSNABURGS AND SHEETINGS

The market for these fabrics is very strong and active, with the possible exception of extra wide fabrics such as are used for automobile tops and similar imitation leather products. Bag manufacturers have cornered practically all the supply of Osnaburgs and are using these fabrics as substitutes for burlap that can no longer be had at a commercial price.

GARMENT CLOTHS

Quotations in these lines of fabrics are very irregular owing to the variances in

the degree of demand for spot and the variances in the demand for spot and near-by goods. A large business is passing in twills and drills for proofing.

BURLAPS

Spot burlaps can only be had in very small lots and buyers are bidding for goods afloat at practically spot prices. The shortage of these goods is so acute that a conference of bag manufacturers has been held to decide what to do. The situation is that due to the non-arrival of burlaps, bag manufacturers find themselves heavily oversold and unable to deliver. Osnaburgs are being used on a large scale as substitutes for burlaps.

NEW YORK QUOTATIONS

TIRE FABRICS.

17¼-ounce Sea Island, combed,	sq. yd.	$1.60@1.70
17¼-ounce Egyptian, combed		1.40@1.45
17¼-ounce Egyptian, carded		1.30@1.35
17¼-ounce Peelers, carded		0.80@0.90
17¼-ounce Peelers, combed		1.00@1.05
American Carded Staple, 12 to 20 yard, per lb. (pound basis)		.55
American Carded Staple, 8 to 10 yard, per lb. (pound basis)		.52

MECHANICAL DUCKS

Hose (nominal)	.53
Belting (nominal)	.53

DUCKS

Single Filling (pound basis)	lb.	.48
Double Filling (pound basis)		.52

DRILLS

37-inch 2.35-yard	yd.	.22
37-inch 2.75-yard		.18¾
37-inch 3.00-yard		.17¼
37-inch 3.25-yard		.16½
37-inch 3.50-yard		.15½
37-inch 3.95-yard		.14½
38-inch 2.00-yard Southern	lb.	.48
38-inch 2.00-yard Northern		.50
40-inch 2.47-yard Northern	yd.	.19
40-inch 2.47-yard Northern		.23
52-inch 1.90-yard Southern		.26½
52-inch 1.90-yard Northern		.27⅜
52-inch 1.95-yard Southern		.26
52-inch 1.95-yard Northern		.27
60-inch 1.52-yard Southern		.32
60-inch 1.52-yard Northern		.32¾

SHEETINGS

40-inch 2.35-yard	yd.	.21
40-inch 2.50-yard		.21
40-inch 2.85 yard		.17½
40-inch 3.00-yard		.16
40-inch 3.25-yard		.17
40-inch 3.60-yard		.14¾
40-inch 3.75-yard		.14¼
40-inch 4.25-yard		.13¼
38-inch Jacket Cloths	yd.	.18

TWILLS FOR PROOFING

37-inch 2.85-yard	yd.	.19
37-inch 2.35-yard		.23½
37-inch 2.10-yard		.25½

COTTON STOCKINETTES (52-inch.)

E—11½-ounce	yd.	.75
A—11 -ounce		.50

BURLAPS

(Spot Carload lots.)

40-inch 7½-ounce	per 100 yards	$16.00
40-inch 8 -ounce		16.50
40-inch 10 -ounce		20.00
40-inch 10½-ounce		21.00

Chemicals and Compounding Materials

NEW YORK, Nov. 22, 1917.

Purchasing operations in the market for chemicals and compounding materials were of a conservative character throughout the interval. Large manufacturing interests appear to be fairly well supplied and they are not anxious to contract far ahead at prevailing high prices. On the other hand, stocks of many of the important items in the list are comparatively low and sellers take a bullish view of the situation. Contract prices for lithopone for delivery over the first quarter of 1918 have been announced. Producers now quote 6½c. per pound for January-March shipment, which compares with 6c. a year ago. Lead and zinc pigments closed unchanged, with the demand quiet. Owing to the upward tendency of raw materials, the rubber substitutes were in a firmer position. Antimony sulphurets closed firm, but quotably unchanged. Sulphur is moving freely on old contracts. Aniline oil is firmer, so far as producers are concerned.

ANTIMONY SULPHURETS

The lower market for antimony metal had no influence upon sellers of sulphur, etc. Spot offerings are moderate, due to the fact that most operators are well sold up on contract. Red sulphuret closed nominally at 25 to 26c. per pound, with the golden at 28 to 32c. and the crimson at 45 to 50c.

ANILINE OIL

Owing to the high cost of acids and other basic materials, producers of aniline oil take a rather bullish view of the future. They quote from 27 to 28c. per pound, drums extra. Second-hands offered scattered lots at 26 to 26½c. per pound, drums extra. The demand for aniline oil was quiet.

BENZOL

A good volume of business has been booked during the last two weeks, yet this failed to influence prices. Surplus stocks are large and some price shading was in evidence. Pure benzol closed at 45 to 48c. per gallon, in tanks, f.o.b. works, immediate shipment. On contract the inside price might have been shaded.

CHALK

Extra light precipitated chalk sold on the basis of 5c. per pound, round lots. Ordinary light chalk closed unchanged at 4¾ to 5c., with the heavy at 3¾ to 4¼c. per pound.

CAUSTIC SODA

Scattered sales of 76 per cent solid on spot were reported at 8 and 8¼c. per pound. The market was inactive and the undertone barely steady. Second-hands quote 6½ to 6¾c. per pound for 1918 shipment.

LEAD PIGMENTS

With the market for pig lead steady, prices for the lead pigments ruled firm on the basis of 9c. per pound for the standard dry and 8½c. per pound for the sublimed. Red lead closed at 10 to 10½c. for the standard dry, round-lots. Litharge held at 9½ to 10c.

LITHOPONE

Producers announced contract prices covering shipment over the first quarter of 1918. Owing to the unsettled condition of the market producers are unwilling to quote over the whole year. Lithopone for January-March delivery is now held at 6½c., car-lot basis.

SULPHUR

Refiners quote the market unchanged on the basis of $3.85 per 100 pounds for the flour, in car-lots. Deliveries on old contracts are heavy, but new business is less active. Stocks are light and the tone of the market remains firm.

ZINC PIGMENTS

The trade is awaiting the new contract prices. These have not yet ben announced by producers, but are expected within a short time. In the meantime business is rather quiet. Horsehead brand is held at 10¼c. contract, and 13 to 13½c. for spot delivery.

Prices Current for Chemicals, Fillers, Colors, etc.

Acetone	lb.	.35	@	.36
Acids, Acetic, 28%	lb.	.06	@	.06½
Carbolic, C. P.	lb.	.53	@	.55
Cresylic, 95%	gal.	1.05	@	1.10
Muriatic, 20 deg.	lb.	.02	@	.02¼
Muriatic, 22 deg.	lb.	.02½	@	.02⅝
Nitric, 35 deg.	lb.	.08½	@	.08¾
Nitric, 40 deg.	lb.	.08¾	@	.09
Sulphuric, 60 deg.	lb.	.01½	@	.01¾
Tartaric, crystals	lb.	.78½	@	—
Aluminum Flake	ton	22.00	@	24.00
Aniline oil	lb.	.27	@	.29
Antimony, metal, spot	lb.	13.50	@	14.00
Oxide	lb.	15.00	@	16.00
Sulphuret, red	lb.	.25	@	.26
Sulphuret, golden	lb.	.28	@	.30
Sulphuret, crimson	lb.	.45	@	.48
Asbestos	ton	40.00	@	60.00
Asphaltum, Egyptian	lb.	.20	@	.25
Domestic	ton	18.00	@	25.00
Barium sulphate, technical	lb.	.04¼	@	.04¾
Chloride	lb.	.04¾	@	.05¼
Barytes, prime white imported	ton	38.00	@	40.00
white, domestic	ton	28.00	@	32.00
off color, domestic	ton	18.00	@	22.00
Benzol, pure	gal.	.45	@	.50
Beta-naphthal, sublimed	lb.	.85	@	.90
unsublimed	lb	.65	@	.70
Blacks, Drop	lb.	.07	@	.12
Ivory	lb.	.16	@	.30
Carbon gas	lb.	.27	@	.35
Lampblack R. M.	lb.	.04½	@	.06
Mineral blacks	ton	24.00	@	28.00
Blues, Prussian	lb.	.65	@	1.35
Soluble (potash)	lb.	1.45	@	1.75
Ultramarine	lb.	.18	@	.35
Browns, Umber, Turkey, burnt, powdered	lb.	.04	@	.05
American, burnt	lb.	.03	@	.03½
Cadmium sulphide, yellow	lb.	2.25	@	2.50
Carbon bisulphide, bulk	lb.	.07½	@	.08
tetrachloride, drums	lb.	.16½	@	.17
Caustic Soda, 76@78%	lb.	.08	@	.08½
Chalk, precipitated, extra light	lb.	.05	@	.05¾
light	lb.	.04¾	@	.05¼
heavy	lb.	.03¾	@	.04¼
China clay, domestic	ton	18.00	@	22.00
imported	ton	25.00	@	35.00
Fossil flour	lb.	.06	@	.10
Gilsonite	ton	40.00	@	44.00
Glue, extra white	lb.	*.28	@	.38
medium	lb.	*.25	@	.28
low grade		*.22	@	.25
Glycerine, C. P. (drums)	lb.	.70	@	.71
Graphite, flake (bbl.)	lb.	.15	@	.20
powdered (bbl.)	lb.	.10	@	—
Green, chrome, R. M.	lb.	.12	@	.30
Ground glass (fine)	lb.	.03	@	—
Hexamethylene	lb.	.75	@	.80
Infusorial earth, powd'd.	ton	60.00	@	—
bolted	ton	70.00	@	—
Iron oxide, red, reduced grades	lb.	.04	@	.05
red, pure, bright	lb.	.12	@	.14
Lead, red oxide of	lb.	.10	@	.10½
sublimed blue	lb.	.08½	@	.09
white, basic carb.	lb.	.09	@	.09½
white basic sulph.	lb.	.08½	@	.09
Lime flour	lb.	.01½	@	.01¾
Litharge	lb.	.09½	@	.10
English	lb.	*.12	@	.13
sublimed	lb.	.09¼	@	.09¾
Lithopone, domestic	lb.	.06½	@	.07
Magnesia, carbonate	lb.	.11	@	.13
calcined, heavy	lb.	.10	@	.10½
calcined, light	lb.	.70	@	.75
Magnesite, calcined, pwd.	ton	65.00	@	70.00
Mica, powdered	lb.	.03¾	@	.05
Mineral rubber (asphaltum base)	ton	40.00	@	60.00
Naphtha, motor gasoline, (steel bbls.)	gal.	.24	@	—
68 @ 70 degrees (steel bbls.)	gal.	.30	@	—
70 @ 72 degrees (steel bbls.)	gal.	.31	@	—
73 @ 76 degrees (steel bbls.)	gal.	.33	@	—
machine (wood bbls.)	gal	.41	@	—
Oil, corn, crude	cwt.	18.50	@	—
corn, refined	cwt.	*20.61	@	—
linseed (bbl.)	gal.	1.20	@	1.22
palm, Lagos	lb.	.21½	@	.22
pine, yellow	gal.	.44	@	.45
rapeseed, refined	gal.	1.65	@	1.70
rapeseed, blown	gal.	1.70	@	1.75
rosin, first rectified.	gal.	.42	@	.43
tar (commercial)	gal.	.30	@	.32
Orange mineral, American.	lb.	.13	@	.13½
imported	lb.	*.15	@	.20
Petrolatum, bbls., amber.	lb.	.04¾	@	.05
pale yellow	lb.	.05	@	.05½
Pipe, tar	bbl.	14.50	@	14.75
Pitch	bbl	4.00	@	4.75
Plaster of paris	bbl.	2.00	@	2.50
Red, Tuscan	lb.	.25	@	.30
Indian (reduced)	lb.	.06	@	.08
Standard	lb.	.08	@	.11
Rosin (common to good), @ 280 lbs	bbl.	6.80	@	6.90
Rotten stone, powdered	lb.	.02¾	@	.04¼

Rubber substitute, Black	lb.	.11	@ .15
white	lb.	.14	@ .16
brown	lb.	.16	@ .17
Shellac, fine orange	lb.	.65	@ —
T. N.	lb.	.60	@ —
Bleached, ordinary	lb.	.55	@ —
Bleached, bone dry	lb.	.65	@ —
Silex (silica)	ton	24.00	@ 34.00
Soapstone, powdered	ton	12.00	@ 20.00
Starch, corn, powdered	lb.	.06½	@ .06¾
Sulphur, crude	ton	45.00	@ 50.00
refined, flour, per 100-pounds, in bbls.		3.85	@ 4.40
roll		3.70	@ 4.15
commercial		3.35	@ 3.65
Talc, American	ton	12.00	@ 16.00
French	ton	22.00	@ 30.00
Toluol, pure, in drums	gal.	*1.75	@ 2.00
Tripolite earth	ton	60.00	@ 65.00
Turpentine, pure gum—			
spirits	gal.	.50	@ .50½
wood	gal.	.45½	@ .48½
Venice, artificial	gal.	.12	@ .13
Vermilion, English	lb.	1.90	@ 2.10
Wax, beeswax, crude yel.	lb.	.35	@ .37
ceresin, white	lb.	.17	@ .19
carnauba, No. 3	lb.	.46	@ .48
Montan	lb.	*.35	@ .40
Wax, ozokerite, black	lb.	.75	@ .80
ozokerite, green	lb.	*.85	@ .95
Paraffin, refined, 118/120 M.P. (bbls.)	lb.	.10½	@ .11
123/125 M.P.	lb.	.11½	@ .11¾
128/130 M.P.	lb.	.11¾	@ .12
133/136 M.P.	lb.	.12¾	@ .13
Crude, 117/118 M.P.	lb.	.08¼	@ .08½
124/126 M.P.	lb.	.08½	@ .08⅝
Whiting, commercial	cwt.	.95	@ 1.10
Alba	cwt.	1.00	@ —
Paris, white, American	cwt.	1.25	@ —
English cliffstone	cwt.	1.50	@ —
Yellow chrome	lb.	.24	@ .27
Zinc oxide, American process, horsehead brand	lb.	†.10¼	@ .10⅛
selected	lb.	†.10⅜	@ .11
"XX red"	lb.	†.10¼	@ .10⅛
French process, green seal	lb.	†.14½	@ .14⅝
red seal	lb.	†.14	@ .14⅛
white seal	lb.	†.15	@ .15⅛
Zinc substitutes	ton	30.00	@ 35.00
Zinc, sulphide, pure	lb.	*.07½	@ .08

†Contract prices. *Nominal.

The Crude Rubber Market

NEW YORK, Nov. 22, 1917.

The tendency of prices for crude rubber was downwards throughout the two weeks under review. Deliveries of rubber to manufacturers on old contracts were large, but with importations heavy and new business coming forward slowly no support was in evidence and closing quotations for practically all grades established new low records for the year. Owing to the extremely unsettled condition of shipping, etc., resulting from the war, manufacturers are carrying abnormally heavy stocks of crude material. This policy, however, has little influence upon the market as the available supply is more than ample.

A feature during the last fortnight was the sharp break in prices for Brazilian grades, amounting to 6c. on up-river fine. Operators report that this was occasioned by the inability to make shipments to Russia, which resulted in selling pressure here. The plantation grades closed from 3½c. to 4½c. per pound lower than two weeks ago. Central American descriptions registered net declines of 2c. and 2½c. per pound.

Manufacturers showed comparatively little buying interest, even after the new low records were established. Speculative activity was also lacking. In some quarters it was reported that a fair short interest was outstanding, and while some covering by shorts was actually noted this failed to support values. Futures were only a shade higher than spot prices throughout the interval. Traders were not inclined to discount the far off positions.

In London prices also went off, due mainly to the inactivity of Continental buyers. First latex pale crepe closed today at 30¼*d.*@30½*d.* per pound, prompt shipment, a net loss of 1½*d.* for the two week's period. Smoked sheets closed at 29½*d.*@29¾*d.*, prompt shipment.

First latex pale crepe was offered today at 58½c. per pound, without buyers, and it was intimated that on a firm bid this figure might have been shaded. First latex pale crepe for December delivery was available on a parity with the spot market. For January—June the market ranged from 58½c. to 59c. per pound. Ribbed smoked sheets for spot and nearby delivery closed at 56½c., with January—June at 57@57½c. per pound.

Para up-river fine sold down to 56c. per pound, which price was fully 2½c. under the market for first latex. The lower grades of Brazilian rubber also went off sharply, Cameta closing at 25½c. and Islands coarse also at 25½c. Caucho ball was reduced to 36c. nominal. Central American grades closed at 36½c. for Corinto and 36c. for prime Esmeralda. Guayule was lowered to 28c. by leading importers. An easier market obtained for the East Indian gums.

	Spot.	Nov-Dec.	Jan-Mar.
Para—Up-river fine, lb.	56	56½	..
Up-river medium	50	50½	..
Up-river coarse	37	37½	..
Caucho ball	36	36	..
Islands fine	45½	..	..
Islands coarse	25½	25½	..
Cameta	25½	25½	..
Madeira fine	59	..	..
Ceylons-Smoked sheets, ribbed	56½	56½	57½
Smokers sheets, plain	55½	55½	56½
First latex pale crepe	58	58½	58½
Amber crepe	56	56	57
Clean brown crepe	54	54	55
Centrals—Corinto, prime	36½	36½	..
Esmeralda, prime	36	36	..
Mexican scrap	35	35	..
Balata, sheets	*81	..	..
Balata, block Panama	55	55	..
Guayule	28	28	..
Africans—Rio Nunez, string	*62	..	..
Massai, red	48	48	..
East Indian Pontianak	12	11¾	..
Palembang	12¼	12¼	..

* Nominal.

Scrap Rubber

NEW YORK, Nov. 23, 1917.

There is an easier tone in the scrap rubber market except for boots and shoes, arctics and automobile inner tubes, which are being taken up readily. Tire casings and also hose have fallen off in value.

The following prices were paid for scrap rubber delivered at the reclaiming mill:

Boots and shoes	9	@	9¼
Arctics, trimmed	7	@	7½
Arctics, untrimmed	..	@	6¼
Tires—Automobile	..	@	5½
Bicycles, pneumatic	..	@	5
Mixed hose	..	@	2¼
Air brake	..	@	5¼
Inner tubes, No. 1	20½	@	..
Inner tubes, No. 2	..	@	10½
Red	..	@	10½

Importations of Crude Rubber Into the United States in October, 1917

Figures compiled by The Rubber Association of America, Inc., 17 Battery Place, New York City. (Estimated net weights.)

PLANTATIONS

From	Tons
Liverpool	227
Hull	6
London	531
Singapore	567
Colombo	3,165
Batavia	1,570
*Japan	1,243
	7,309

* And other countries.

MANICOBAS AND MATTO GROSSO

Ceara	102

AFRICANS

Liverpool	1
Bordeaux	22
	23

**CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	18
Guayule (Mexico)	120
	138

PARAS

Iquitos	77
Manaos	262
Para	1,059
	1,398

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

Tons		Tons
Scrap 432	Balata	8
Reclaimed Rubber, 149	Jelatong	195
Miscellaneous Gums		8 tons

COMPARISON, 1916-1917.

	October, 1916.	October, 1917.
Plantations	7,360	7,309
Paras	551	1,398
Africans	162	23
Manicobas and Matto Grosso	83	102
Centrals	124	18
Guayule	80	120
	8,360	8,970

** Note.—Owing to the war, it is temporarily impossible to furnish complete statistics for rubber arriving on boats from Central America.

Arrivals Plantation Rubber for October, 1917, Showing Ports of Origin and Destination

From	Arrived at	Tons
Singapore	Seattle	87
Singapore	Port of Cleveland	311
Singapore	San Francisco	161
Singapore	Tacoma	8
Batavia	New York	1,104
Batavia	San Francisco	466
Hull	New York	6
London	New York	482
London	Boston	49
Liverpool	Boston	15
Liverpool	New York	212
*Japan	Tacoma	442
*Japan	San Francisco	621
*Japan	Seattle	180
Colombo	Seattle	1,204
Colombo	Tacoma	1,961
		7,309

* Including other countries.

Arrivals of Plantations by Ports

Atlantic Ports		
Boston	64 tons	
New York	1,804 "	
		1,868 tons
Pacific Ports		
San Francisco	1,248 tons	
Seattle	1,471 "	
Tacoma	2,411 "	
		5,130 tons
		6,998 tons
Port of Cleveland	311 "	
		7,309 "

Notes of the Dealers

Geisinger Auto & Vulcanizing Co., Storm Lake, Iowa, succeeds the Storm Lake Vulcanizing Co.

R. M. Kemp has purchased the interest of his partner, Fred J. Ingram, in the Riley Auto Tire Co., Pine Bluff, Ark.

Paul Hoots has purchased the accessory and tire store at 2285 Broadway, Oakland, Cal.

Albert Moore has added an extensive vulcanizing outfit to his shop on Maple street, Sycamore, Ill.

Lewis Patterson, proprietor of the Caruthersville Steam Vulcanizer Co., Caruthersville, Mo., has brought his brother-in-law's Blytheville plant and will conduct it as a branch of his tire-repairing business.

TIRE NEWS

Pneumatic Tires for Heavy Haulage

As a result of a recent remarkable record made by a Packard 1½-ton truck equipped with United States "Nobby" tread pneumatic tires, the officials of the United States Tire Co. are firm in the belief that pneumatic tires will supersede solid tires for heavy commercial vehicles.

First. Lieut. J. W. O'Mahoney, a former United States motor transport truck expert, who carried out the tests and drove the truck himself, in speaking of the service obtained, says:

Truck Equipped With U. S. Cord Tires

In the first place I made up my mind that in order to give the tires the hardest kind of army transport test—which is the severest that any truck could ever be put to—I could not spare the truck, even if I had to wreck it. And the amazing part of the trip is that the truck came back to Detroit after covering 4,288 miles of the worst roads and "trail blazing" that I have ever known, in practically as good condition as when it first left Detroit. This fact alone absolutely demonstrates to my mind that if a pneumatic tire could be built to stand up under the terrific strain and wear of truck service, truck maintenance cost for repairs and replacements could be cut down to a minimum, with the natural reduced cost per ton mile, and the life of a truck could be increased 100 or 400 per cent.

I have seen a great deal of army truck service along the Mexican border, and with General Pershing's army beyond the border into Mexico, where roads are the exception and not the rule, and I have never seen or heard of such a terrific series of super-difficulties as these tires stood up to. We went through hundreds of miles of 12 to 14 inches of soft clay and secured ample traction. We went other hundreds of miles over roads of inter-mixed mud and sharp stones, and the tires stood up to this. There were still more hundreds of miles over the crackling heat of Texas desert—and even this had little or no effect on the tires. And when we did not have to encounter mud, sharp stones and heat, we were crashing through bridges and fording rock bottomed streams.

Under such unprecedented conditions these tires not only stood up well for pneumatics, but did better, if anything, than solids could have done.

I should say that, considering the abnormal road conditions of this journey, these pneumatic tires would, under normal conditions, give three to four times the mileage they gave on this cross-country trip. The average mileage for the entire 4,288 miles was considerably more than seven miles per gallon of gasoline. On fairly good country roads, such as are apt to be found on the road from San Antonio to Sherman, Tex., and across Kentucky and Indiana, the mileage was better than 10.6 miles per gallon. The high mileage of 11.7 was reached on a stretch of excellent highway running from Bowling Green to Louisville, Ky.

The average mileage per quart of oil for the entire trip from Detroit to Mexico and back was 32.42 miles, which proves to my mind that pneumatic tires for trucks do much to reduce the pulling strain on the motor.

Fisk Electric Sign on Broadway

Tire Signs on Broadway

The action of United States Fuel Administrator Garfield in limiting the use of electrical signs to a period between 7.45 p. m. and 11 p. m. for the purpose of saving coal, will perhaps temporarily check the growing use of signs for advertising purposes. However, within the prescribed limits, Broadway is as bright as ever and included in the many electrical displays are a number of tire signs.

The novel electrical sign of the Fisk Rubber Co., Chicopee Falls, Mass., effectively carries its message to the thousands thronging New York's "White Light" district. Especially appropriate are the words, "Time to Re-tire," which appear after a series of six flashes showing a sleepy, yawning youngster. The final flash is shown in the illustration. About 3,000 electric bulbs in assorted colors are used, and an idea of the size of the sign may be gained from the dimensions of the figure of the boy, which is fifty-five feet, six inches high.

The Pennsylvania Rubber Co.,

Jeannette, Pa., is now flashing nightly the following patriotic message from its huge sign located on the Motors Building, Columbus Circle, New York:

"Our president, vice-president and over one hundred employes have joined the colors. Those remaining at home have enlisted with Mr. Hoover, because we believe that food will win the war. We observe weekly in our company restaurant and homes two meatless and two wheatless days. We find we feel just as well physically and a whole lot more like patriots."

The sign is 50x70 ft. in size, and doubtless the "above" motograph will be of value to Herbert Hoover in his food conservation campaign.

Tire Expansion in Hot Weather

In a breezy and well-pointed letter, Clyde S. Thompson, Advertising Manager of the Miller Rubber Co., Akron, Ohio, sets forth his reasons against deflating tires in hot weather to allow for expansion due to greater heat outside the tire.

The letter was written to a friend in New York and is as follows:

They say that a cat has nine lives, but I know an old cat with a million lives. It can't be killed. He keeps bobbing up year after year and always howls the same old melody, viz., namely, to wit and as follows: "Lower tire inflation in hot weather." "Expert (?) finds that sun and super-heated pavements will increase pressure by at least ten pounds." "Decrease amount of air to avoid blowouts and add to the comfort of the car's occupants.

The quotations are the headlines in a story in the ——— of Sunday, August 12. Like the story of George Washington and the cherry tree, the old superstition about decreasing tire pressure to overcome heat from the pavement in summer time will not down. I have personally hurled a million brickbats at this old cat, but he comes up smiling—singing the same old song each succeeding season.

As a matter of fact, it is all tommyrot, moonshine and nonsense. Hot pavements and the heat of the sun won't increase air pressure in a tire enough to blow it out, any more than the same sun-heated pavements will cause hair to grow on a billiard ball. Every tire heats up when it is in motion on a car, but it isn't the heat of the sun that causes it. Not by a jugful! Any man who knows anything about tire construction will tell you that heat is generated not on the outside but on the inside of the tire.

A tire is made up of several layers of cotton canvas fabric. Between these layers of fabric is a thin skin of rubber. When the car moves the action sets up a friction between the several layers of canvas fabric. This friction generates heat, which is absorbed and passed on to the air in the tube.

I am inclosing herewith two pieces of cotton fabric the same as is used in making tires. Take a piece in each of your hands, then rub the two bits of fabric together briskly for a half minute and see how all-fired hot it gets. This same friction is what heats up a tire, and not old John Henry Sun.

And, while this heat increases the air pressure within the tire, it does not increase it nearly so much as is popularly supposed, and not enough to affect the strength or the structure of the tire in the slightest degree. Any tire engineer will tell you that this added pressure from the heat is in direct proportion to its temperature (the volume of air remaining the same) above the absolute zero, which is 459.2 degrees below zero, F. For example, a 34x4 tire, inflated to its proper pressure of 72 pounds per square inch, with air at 50 degrees F. would have a pressure of only 82.4 pounds per square inch at 125 degrees F. One hundred and twenty-five degrees is pretty hot, but the increased pressure is not sufficient to cause a blowout. You can readily appreciate that this increased pressure is not a factor, because any well made tire will withstand several times the amount of pressure recommended for its use.

Then your expert further says that he "presumes that the average owner would rather have comfortable riding even at the expense of tire mileage." This is very decidedly a presumption on his part, because any tire adjuster will tell you that the one thing every tire user insists upon is mileage, and the thing that he usually denies is that he runs his tires too soft. He never mentions comfortable riding when he is striving for an adjustment.

Heaven protect us from the amateur tire expert! It is easy enough for him to recommend driving tires soft. The unfortunate part of it is that thousands of people will follow his advice, and then expect the tire company to make good when the tires fail to deliver the mileage they expect of them.

According to your experts, tires must be built by "rule-of-thumb." That only proves that they do not know anything about tire building. The present pneumatic tire is one of the great developments of the age. The strains and stresses to which tires are subjected are as carefully worked out in advance by tire engineers as are strains and stresses in the steel work of a skyscraper. Any time a self-appointed expert begins giving advice contrary to the advice of the tire engineers he is simply encouraging a lot of people to ruin expensive tires. Riding on tires that are too soft sets up a hinge action in the side walls of the tire that will quickly ruin it. In addition, these soft tires, by presenting too great a surface to the street pavement, serve as a drag upon the engine and consume power. Translated into present prices of gasolene, this means the burning up of a lot of money, so that it results not only in the ruining of the tire, but the reckless dissipation of power from decidedly expensive gasolene.

Tire engineers build tires to be run at a definite and stated air pressure. Your expert says that he doesn't believe the reduction of ten pounds per square inch would hurt the tire. Will he pay for all the tires he causes to be ruined by this so-called advice?

My advice as a tire man is for the automobilist to pump up his tires to the pressure advocated by the tire maker. If he finds this pressure jolts him around too much I advise him to get another car equipped with a good set of springs.

This will be all on this subject for 1917. Next year I expect to read the same old story, and I will then write you another letter.

Dealer Must Protect Buyers

The responsibility of a dealer making a shipment of merchandise was established by a recent court decision in a case where a shipment of tires was lost in transit, the dealer having neglected to properly insure them at the time of shipment.

A dealer sold some automobile tires which were to be shipped from New York to Allenhurst, N. J., by express. The buyer paid $95.43 in advance, and the seller shipped them without declaring their value, which had the effect of limiting the express company's liability to $50.

The tires were lost on the way and the buyer notified the dealer, who made a second shipment. When the dealer attempted to collect for the second shipment, the buyer refused to pay, claiming that because of the dealer's negligence he could get only $50 from the express company for the goods for which the purchaser had paid $95.43 in advance. The dealer thereupon sued the buyer for the amount of the second shipment, but the court refused judgment against the buyer, saying:

"Unless otherwise authorized by the buyer, the seller must make such contract with the carrier on behalf of the buyer as may be reasonable, having regard to the nature of the goods and the other circumstances of the case. If the seller omits so to do, and the goods are lost or damaged in course of transit, the buyer may decline to treat the delivery to the carrier as a delivery to himself, or may hold the seller responsible in damages." (Northwestern 781.)

Trucks to Relieve Railway Pressure

Col. Samuel P. Colt, president of the United States Rubber Co., recently stated that, in his opinion, railway conditions call for the mobilization of everything on wheels.

Colonel Colt said: "In analyzing our transportation facilities it is evident that everything on wheels must be used and mobilized. Second to the railroads, as an adjunct and supplementary to them in collecting and distributing merchandising, is the automobile. Use your car, both passenger and commercial, more and more to relieve the transportation pressure on the nation's railroads and merchant delivery service. There need be no restriction on the legitimate use of automobiles rendering the magnificent loyal service, second only to the railroads, to our Government at this time."

Notes of Interest to the Tire Trade

Mr. Githens on the Business Outlook in the West—Superior and Zee Zee to Build New Factories—Amazon Red, White and Blue Tire—New Cuban Co.—Seiberling, Stevens Patents Upheld

Business Outlook Good in West

H. A. Githens, general sales manager of the Federal Rubber Co., Cudahy, Wis., spends a large part of his time traveling around the country gathering information at first hand on business conditions in general and sizing up the tire situation in particular. He has found the business outlook very good and says:

"I should liked to have had a few of the calamity shouters along with me on my last trip through the West. It would have opened the eyes of some of these people who are continually harping on hard times and general business depression.

"Business is good out West. There is a lot of money there and Federal dealers all report increasing sales. I do not find a city where optimism is not supreme in spite of the war and the fact that everyone is called upon to do his or her bit toward bringing it to a successful end.

"This spirit of optimism is bound to be conducive to a healthy financial condition because it inspires business men with energy. It has made the Western country what it is today and it is indicative of the spirit that prevails throughout the entire country.

"When we held our national sales conference a few weeks ago I made it a point to interview every one of our district managers who came in from all parts of the United States to attend the convention. I was interested to know whether they had found the same conditions existing in their territory as I found on my trip through the West. Without exception every one of them reported a bright outlook for 1918."

Diamond Sales Manager Writes Article

N. E. Oliver of New York, sales manager of the Diamond Rubber Co., New York, has had published an article, entitled "Building for Success," in the current issue of the *Hardware Dealers' Magazine*. It is full of valuable success hints, which Mr. Oliver has acquired in his experience as a salesman.

The concluding paragraph sums up his thoughts. It reads: "Be sure that you are the power behind your job; in fact, as nearly 100 per cent efficient as possible. Don't leave ragged edges—you may hold on that way, but you won't 'go up.' Learn to think over your position, for if a man can see nothing beyond, it's nine chances out of ten he's not the right man in the right place."

Reed Joins Kelly-Springfield

Harry C. Reed, formerly in charge of the inner-tube department of the Gryphon Rubber & Tyre Corp., New York, is now managing a similar department in the Buffalo plant of the Kelly-Springfield Tire Co. Mr. Reed has had seven years' experience in the manufacture of inner tubes and has equipped and managed several tube departments, having been connected successively with The B. F. Goodrich Co., Akron, Ohio; the New Castle Rubber Co., New Castle, Pa., and the Gordon Tire & Rubber Co., Canton, Ohio.

Zee Zee to Build

The Zee Zee Rubber Co., Yardville, N. J., is planning the erection of a two-story addition to its present plant. According to the plans, the structure will cost in the vicinity of $25,000.

Superior to Erect Factory

The Superior Tire Co., Anderson, Ind., will within a month break ground for the erection of a new factory. The company, which is capitalized at $750,000, will build a two-story concrete structure with a floor space of 50,000 sq. ft. The plant will have a capacity of 500 tires daily, but only 300 tires will be manufactured at the start. The president is O. Hibner, a former sales manager of the Knight Tire & Rubber Co., Canton, Ohio. The consulting engineer is Charles A. BeSaw, president of the BeSaw Tire & Rubber Co.

Lynn Rubber Co. to Move

The Lynn Rubber Mfg. Co., now located at Lynn, Mass., manufacturer of rubber heels and arch supporters, has announced that the company is about to locate in Warren, R. I. It is the intention of the company to build a two-story factory. William C. Wheeler is president of the company.

Jackson-Eno Co. Changes Name

George W. Eno of the Jackson-Eno Rubber Co., has purchased the interest of W. A. Jackson, and the business has been incorporated for $150,000. The following are the original stockholders and directors: George W. Eno, John C. Stockwell, A. T. Sackett, W. C. Cutler and D. M. Eno. The new company will operate under the name of George W. Eno Rubber Co.

Liberty Loan Sign

In response to an appeal of the Government for co-operation in helping along the sale of Liberty Loan Bonds in its recent campaign, the Kelly-Springfield Tire Co. donated the use of its large painted sign located on Broadway and Seventy-third Street, New York. In addition the company subscribed $250,000 for the purchase of the bonds, making its total subscription $325,000. In acknowledgment of this patriotic action, the company received the following telegram from Benjamin Strong, Governor of the Federal Reserve Bank of New York:

"Your patriotic action in co-operating with the Government in connection with painted bulletin is much appreciated. I want to thank you personally for your very generous and effective help."

Adair and Lee New Distributors

Among newcomers in the distributing field is the Adair-Lee Tire Co., which has taken a general agency for General tires in the city of Omaha and surrounding territory.

Both partners in the enterprise are old in the service of the General Tire & Rubber Co., Akron, Ohio. O. C. B. Adair has been with the General company since its inception, and was recently made district manager at Chicago. G. G. Lee had had a successful selling record in the Kansas City agency.

Hartford in New Quarters

The Hartford Tire Co., New York, removed from 149 West 51st Street to its new salesrooms at 238 West 56th Street on Oct. 1. The company's new quarters comprise more than 3,000 sq. ft. of floor space and afford greatly improved facilities for the arrangement and display of stock.

Amazon Red, White and Blue Tire

Patriotic demonstrations are taking unusual forms and the public has been thrilled from time to time by some remarkable ideas along this line. It remained, however, for Vice-President Marshall to spring an original one that promises to establish a vogue among automobile owners. Seizing upon the popular idea of colored tires the Vice-President had his big touring car equipped with four Amazon tires colored red, white and blue. The idea has created a sensation among Washington motorists and wherever the tires are seen. Already there are many imitators.

Considerable credit is given the Amazon Tire Company for bringing out this novel creation and the publicity so secured is reflected in the number of daily inquiries received at the company's offices at Akron, Ohio.

Goodyear Claim Validated

A decision has been handed down by the United States Circuit Court of Appeals, Cincinnati, Ohio, validating the Seiberling, Stevens tire machine patents and dismissing the appeal of the Firestone Tire & Rubber Co. from a decision rendered in the lower court that the defendant had infringed the patents of the Goodyear Tire & Rubber Co. In addition, the Circuit Court has ordered that the case be remanded to the lower courts with directions that it be reopened for additional proofs of the subject of the Seiberling patents, and in this way opportunity is given the Firestone Co. to procure points on which to take an appeal.

Teaching Care of the Teeth

The B. F. Goodrich Co., Akron, Ohio, recently used a series of photographs to illustrate to its employes the advantages of clean teeth and the results of neglecting them.

A man who had a sore on his face caused by a bad tooth was the basis of the photographs. Pictures were taken at frequent intervals until the case was completely cured. Another series was made illustrating the methods of cleaning the teeth. Seven or eight photographs showing the proper way to hold the brush, the right motion to give it, and so on, were also taken.

These photographs were given the proper publicity, and no doubt the results of these instructions have been beneficial to many of the employes.

Will Make Tires in Cuba

A concern to manufacture automobile tires and all kinds of rubber goods under the name of the Cuban Tire & Rubber Co., has been established in Havana, Cuba. It is stated that this concern also intends to install machinery for reclaiming rubber for use in its factory.

B. G. M'Cague Dies

Benjamin G. M'Cague, treasurer and general manager of the Hardman Tire & Rubber Co., 1904 Broadway, New York City, which he founded eight years ago, died suddenly on Nov. 14 at his home, 1016 Garden Street, Hoboken, N. J. He was forty-five years old.

Reynolds Made District Manager

William A. Reynolds has been made district manager for the Goodyear Tire & Rubber Co. in New York City He succeeds A. A. Lyon, who is now special representative. Mr. Reynolds was formerly in the company's industrial department at Akron.

Classified Buyers' Index To Rubber Factory Equipment

Below is printed an alphabetical list of the principal machinery and other equipment used in rubber factories, compiled from information supplied by the manufacturers. The key symbols placed after the items refer to the names of the manufacturers that make them, as shown in the list of Manufacturers of Rubber Factory Equipment, that is printed elsewhere on this page.

Accumulators, A11, B23, F3, T31, W31.
Autoclaves, A11, B31, D15, E11, S55.
Balances, B7, E11, S19, T27.
Bins, Stock, O3.
Blocks, Pillow, A11, F3, T43.
Blowers, Tube Splicing, G3.
Boilers, Steam, S31.
Boosters and Exhausters, A3.
Boxes, Compound, O3.
Brands, Aluminum, D19.
Brakes, T43.
Brushes, O7.
Buckets, D27.
Cages, D27.
Calenders, A11, F3, S31, T43.
Calenders, Embossing, F3, H11, T19, T43.
Cars, Shoe, O3.
Carton Filling Machines, W23.
Carton Making Machines, W23.
Castings, A11, B3, B23, B31, D27, F3, M3, T31, T43, W31.
Chemical Apparatus, B31.
Chucks, S47.
Clutches, Brake, F3, T43.
Clutches, Friction, F3.
Clutches, Magnetic, F3, T43.
Compressors, Air, S31, T31.
Condensers, D15, S55, T31.
Conveyors, D27.
Cores, Tire, A11, B3, T31, J3.
Couplings, Power, T43.
Crackers, A11, F3, T43.
Cranes, D27.
Cutters, Baby Carriage Tire, W23.
Cutters, Band, A11, E3, H31, R7.
Cutters, Bias, W23.
Cutters, Duck Plug, W23.
Cutters, Gaskets, A11, H11, H31.
Cutters, Raw Stock, W23.
Cutters, Rubber Stock, H19, H31, R7, T11.
Cutters, Scrap, A3, T11.
Cutters, Strip, E3, F3.
Cutters, Tubing, W23.
Devulcanizers, B11, D15.
Dies, A11, D19, H11, D19.
Die Sinking, A11, D19, H11.
Dies, Cutting, D19, H11.
Digestors, D15.
Dipping Machines, O3.
Doubling Machines, F3, T43.
Doubling Machines, Fabric, T17.
Drills, D27.
Drives, A11, D27, F3, T43.
Drives, Chain, D27, F3, T43.
Drives, Motor, A11, D27, F3, T43.
Drums, Bead, A11, T31.
Drums, Tire Machine, G3.
Drums, Tread, A11.
Dryers, A35, B31, D15, H27, S31, S55.
Dryers, Fabric, C51, D15, T19, T43.
Dryers, Rubber, D15.
Dryers, Vacuum, D15, S55.
Dynamometers, S19.
Engines, Steam, S31.
Engraving Machines, Hard Rubber, A11.
Experimental Outfits, A11, B3, D15, D19, E11, F3, T43.
Extractors, E11.
Fittings, Hydraulic, A11, B23.
Fittings, Water, A11.
Folders, Belt, F3.
Forms, Dipping, D19.
Gages, Pressure, B23, S7.
Gages, Recording, S7.
Gages, Thickness, H11.
Gears, A11, F3, M23, T43.
Governors, Pump, M15.
Grinders, A11, F3, S47, T43.
Grinders, Hard Rubber Dust, A3, A11, F3, R3, T43.
Hammers, Steam, B31.
Hangars, D27, M27.
Hoists, D27.
Holders, Form, O3.
Hooks, Tire, D27.
Hose Machines, F3, R27.
Hydraulic Machinery, A11, B23, F3, H19, T43, W31.
Hydrometers, T7, T27.
Ice Machines and Equipment, D27.
Impregnators, B31, D15, F3, S55.
Instruments, Recording, S7, S19.
Insulating Machines, R27.
Joints, Expansion, A11, B23.
Kettles, A11, B31, D7, D15, S31, S55.
Knives, H31, J7, R7, T43.
Knives, Calender, R7.
Knives, Jar Ring, R7.
Knives, Mill, R7.
Knives, Tapping, R7.
Laboratory Apparatus, D7, D15, E11, F3, R27, S15, S19, T27.
Ladders, Rolling, M27.
Lathes, Hard Rubber, A11, S47.
Lathes, Jar Ring, A11, T31, W23.
Lathes, Wrapping, A11.
Lockers, O3.
Looms, Hose, R27.
Magnets, D23.
Mandrels, A11.
Markers, Shoe, H11.
Microscopes, E11, T27.
Mills, Grinding, A3, A11, E11, F3, R3, D7, T43.
Mills, Mixing, A11, D7, F3, T43, W7.
Mills, Paint, D7, R3.
Mills, Washing, A11, F3, T43, W7.
Mixers, Solution, D7, W7.
Molds, Hose, A11.
Molds, Mechanical, A11, D19, H11, H19, M3, T15, J3, D19.
Molds, Sole and Heel, D19, J3, D19.
Molds, Sundries, D19, H11, J3, D19.
Molds, Syringe Bag, D19, J3, D19.
Molds, Tire, A11, B3, T31, J3, D19.
Molds, Toy, D19, J3, D19.
Molds, Water Bottle, D19, J3, D19.
Motors, D27, E11, T43.
Name Plates, H11.
Pattern Making, A11, M3, T43.
Percolators, D7, D15, E11, S55.
Plaiters, W23.
Plantation Machinery, F3, T43.
Plants, Aniline Oil, D15.
Presses, Baling, B23.
Presses, Bead, A11, B23, F3, W31.
Presses, Belting, A11, B23, F3, T43, W31.
Presses, Blocking, B23.
Presses, Filter, A3.
Presses, Forcing, A11, B23, T43, W31.
Presses, Hand, A11, B23, E11, F3, H19.
Presses, Heater, A11, B11, F3, W31.
Presses, Hydraulic, A11, B23, F3, H19, T19, T31, T43, W31.
Presses, Plate, A11, B23, F3, W31.
Presses, Sheeting, A11, B23, F3.
Presses, Shoddy, A35.
Presses, Tire Setting, A11, B23, W31.
Presses, Vulcanizing, A11, B11, B23, F3, T31, W31.
Pulverizers, A3, D7, E11, R3.
Pumps, A3, A11, E11, M27, S31, T31.
Pumps, Centrifugal, T31, W31.
Pumps, Hydraulic Pressure, A11, B23, S31, T31.
Pumps, Spray, M27.
Pumps, Vacuum, A3, B31, D15, E11, S31, S55, T31.
Racks, Drying, D7, D27.
Racks, Shoe Car, H11, O3.
Racks, Tire, D7, D27, O3.
Railways, Industrial, D27.
Reclaiming Machinery, B11, D7, F3, R27, S55, T43.
Refiners, A11, F3, T43.
Regulators, Damper, M15.
Regulators, Pressure, D3, M15, T7.
Regulators, Pump, M15.
Repair Equipment, Tire, B11.
Riveters, W31.
Rollers, Hand, B3, H11, H19.
Rollers, Strip, B3.
Rolls, A11, F3, T43.
Rolls, Chilled, A11, T43.
Rolls, Cooler, F3.
Rolls, Engraved, F3, H11.
Rolls, Mill, A11, F3, T43.
Rolls, Sand, A11, F3, T43.
Rolls, Steel, F3.
Rolls, Wood, G3.
Safety Appliances, D27, F3.
Scales, B7, D27.
Screens, D7, O3.
Screw-Downs, Calender, A11, T43.
Separators, Air, R3.
Separators, Magnetic, D23.
Separators, Water, A35.
Shafting, A11, D27, F3, T43.
Shears, Hand, J7.
Shears, Power, F3.
Shells, Belting, G3, C55.
Shells, Calender, C55, O3
Shells, Stock, G3, C55.
Sifters, D7.
Sifters, Brush, D7.
Slitting Machines, F3.
Skivers, J7, R7.
Solvent Recovery Apparatus, B31, D15, S55.
Special Machinery, J3.
Spreaders, A11, F3, T43.
Sprockets, D27, M23, T43.
Stamps, Steel, D19, H11, D19.
Stands, Tire, A11, B3, T31.
Starters, Motor, T43.
Sticks, Shoe, H11, O3.
Stitchers, B3, H11.
Stops, Safety, D3, D27, F3, T43.
Strainers, A11, R27.
Stretchers, Belt, A11, F3, T19, T43.
Stretchers, Hydraulic, A11, F3, T43.
Switches, Electrical, D27, T43.
Tables, Calender, O3.
Tables, Cooling, D27, O3.
Tables, Tire Conveying, O3.
Tanks, Acid, B11, D15, S55, T19.
Tanks, Soaking, B11, S55, T31.
Testing Machines, B11, S19.
Thermometers, E11, S7, T7, T27.
Tire Making Machines, B3, R27, T31.
Tire Tread Machines, R27.
Tire Wrapping Machines, Cloth, T15, T31, T43.
Tools, Fountain Pen, S47.
Tools, Rubber Workers', H11, H31.
Tramways, Overhead, D27, O3.
Transmissions, A11, D27, M23, T43.
Traps, Steam, D3.
Trimmers, W23.
Trolleys, D27.
Trucks, Industrial, D7, D27.
Tube Wrapping Machines, A11, T43.
Tubing Machines, A11, R27.
Valves, Float, M15.
Valves, Hydraulic, B23, D27, T31, W31.
Valves, Reducing, D3, D27, M15.
Vulcanizers, A11, B11, D15, T31, W31.
Washers, A11, D15, F3, T43.
Washers, Beater, T43.
Washers, Tub, D7, F3, T43.
Wheels, Buffing, O7.
Wheels, Roller Bearing, D27.
Wire Drawing Machines, T43.
Wiring Machine, Hose, A11.
Wrapping Machines, A11, T15, T31.

Manufacturers of Rubber Factory Equipment

THE RUBBER AGE AND TIRE NEWS will gladly supply information regarding the addresses and products of the following manufacturers of Rubber Factory Equipment.
The advertisements of concerns whose names appear in bold face type will be found in this issue of THE RUBBER AGE AND TIRE NEWS.

A 3—Abbe Engineering Co.
A 7—Adams, John J.
A 11—Adamson Machine Co.
A 15—Adamson Mfg. Co.
A 19—Air Utilities Co., Inc.
A 23—Akron Rubber Mold & Machine Co.
A 27—Allen Machinery Co.
A 31—Alvey-Ferguson Co.
A 35—American Process Co.
A 39—American Rotary Valve Co.
A 43—American Tool & Machine Co.
A 47—Arthur Vulvanizing Machine Co.
B 3—Banner Machinery Co.
B 7—Becker, Christian, Inc.
B 11—Biggs Boiler Works Co. See Advertisement on Page 199.
B 15—Birmingham Iron Foundry.
B 19—Bonnett Co.
B 23—Boomer and Boschert Press Co. See Advertisement on Page 197.
B 27—Bristol Co.
B 31—Buffalo Foundry & Machine Co.
C 3—Cameron Machine Co.
C 7—Cell Drier Machine Co.
C 11—Champion Shoe Machine Co.
C 15—Chernack Mfg. Co.
C 19—Chicago Mold & Machinery Co.
C 23—Edred W. Clark.
C 27—Colonial Sign & Insulator Co.
C 31—Continental Rubber Works.
C 35—Cox, Geo. P., Last Co.
C 39—Crane Co.
C 43—Curtis & Marble Machine Co.
C 47—Cutler-Hammer Clutch Co.
C 51—Cutter, G. A., Sales Agent.
C 55—Cylinder Mfg. Co.
D 3—Davis, G. M., Regulator Co.
D 7—Day, J. H., Co.
D 11—De Mattia Bros.
D 15—Devine, J. P., Co.
D 19—Die Sinking & Machine Co. See Advertisement on Page 198.
D 23—Dings Magnetic Separator Co.
D 27—Duncan, J., Co. See Advertisement on Page 199.
E 3—Eastman Machine Co.
E 7—Eggers, William, & Sons.
E 11—Elmer & Amend.
E 15—Esterline Co.
F 3—Farrel Foundry & Machine Co.
F 7—Ford Chain Block & Mfg. Co.
G 3—Gammeter, W. F. See Advertisement on Page 197.
G 7—Garvin Machine Co.
G 11—General Electric Co.
G 15—Goodnow, L. H., Foundry Co.
H 3—Hartford Special Machinery Co.
H 7—Haywood Tire & Equipment Co.
H 11—Hoggson & Pettis Mfg. Co. See Advertisement on Page 194.
H 15—Hollander & Johnson.
H 19—Holmes Bros.
H 23—Housatonic Machine & Tool Co. See Advertisement on Page 198.
H 27—Hunter Dry Kiln Co. See Advertisement on Page 194.
H 31—Hyde Manufacturing Co. See Advertisement on Page 194.
J 3—Jones & Kuhlke. See Advertisement on Page 198.
J 7—Judson Cutlery Co.
K 3—Knott, L. E., Apparatus Co.
K 7—Kohl Mfg. Co.
L 3—Lander Last Co.
L 7—Landis Machine Co.
L 11—Lenz & Naumann.
L 15—Link Belt Co.
L 19—Lloyd, John, Co.
L 23—Lobdell Car Wheel Co.

Manufacturers of Rubber Factory Equipment—Continued

M 3—McFarland Foundry & Machine Co.
M 7—McGrory, Philip.
M 11—Mahlow & Wykoff.
M 15—Mason Regulator Co.
M 19—Miller, Chas. E.
M 23—Morse Chain Co.
M 27—Myers, F. E., & Bro.
N 3—New England Butt Co.
N 7—Norton, M., & Co.
O 3—Ornamental Iron Works Co.
O 7—Osborn Mfg. Co.
P 3—Pierce Wrapping Machine Co.
R 3—Raymond Bros., Impact Pulverizer Co.
R 7—Richard Co., Inc., Stephen.
R 11—Riehle Bros., Testing Machine Co.
R 19—Ross, Charles, & Son Co.
R 23—Rossman, Roy G.
R 27—Royle, John, & Son.
S 3—Sargent, E. E., & Co.
S 7—Schaefer & Budenberg Mfg. Co.
S 11—Schuchardt & Schutte.
S 15—Scientific Materials Co.
S 19—Scott, Henry L., & Co.
S 23—Sessions, J. H., & Sons.
S 27—Shaler, G. A.
S 31—Shartle Machine Co.
S 35—Shoe Hardware Co.
S 39—Singer Sewing Machine Co.
S 43—Smith-Backmann Machine Co.
S 47—Smith Co., James M.
S 51—Southwark Foundry & Machine Co.
S 55—Stokes, F. J., Machine Co.
S 59—Summit China Co.
T 3—Tagliabue Mfg. Co.
T 7—Taylor Instrument Co.
T 11—Taylor, Stiles & Co.
T 15—Terkelsen & Wennberg.
T 19—Textile Finishing Machine Co. See Advertisement on Page 196.
T 23—Textile Machine Co.
T 27—Thomas Co., Arthur H.
T 31—Thropp's, John E., Sons Co.
T 35—Trefethen, F. L.
T 39—Troemner, Henry.
T 43—Turner, Vaughn & Taylor Co. See Advertisement on Page 200.
U 3—Utility Mfg. Co.
V 3—Venn, Frank.
W 7—Werner & Pfleiderer Co.
W11—Westinghouse Electric Mfg. Co.
W15—Williams Foundry & Machine Co.
W19—Williams Patent Crusher & Pulverizer Co.
W23—Wills, Arthur J.
W27—Wolff Co.
W31—Wood, R. D., & Co.
W35—Work, Joseph W.

SULPHURET OF ANTIMONY

STATES BRAND "MADE IN AMERICA"

HEAVY CALCINED MAGNESIA

THISTLE BRAND "MADE IN SCOTLAND"

MINERAL RUBBER

RICHMOND BRAND AND NUMBER SIXTY-FOUR "MADE IN AMERICA"

AND OTHER RUBBER CHEMICALS AND COLOR SPECIALTIES

FRAZAR & COMPANY

50 CHURCH STREET NEW YORK

Established 1856
REPRESENTED BY

J. A. KENDALL
Second National Bldg.
AKRON, OHIO

FRED L. MOSES
220 Devonshire Street
BOSTON, MASSACHUSETTS

R. NORTHCOTE & CO.
Canadian Pacific Bldg.
TORONTO, ONT.

ACCELERATORS ANTIMONY
CARBON TETRACHLORIDE
CARBON BISULPHIDE
SULPHUR CHLORIDE
ANILINE OIL
BENZOL

1890 LHBCO.

LITHARGE SULPHUR
CARBONATE MAGNESIA
CARBON AND LAMP BLACK
ULTRAMARINE BLUE
WHITING
LIME

L. H. BUTCHER COMPANY

ESTABLISHED 1890

NEW YORK LOS ANGELES SAN FRANCISCO

TIRE FABRICS

OF EVERY DESCRIPTION

TAYLOR, ARMITAGE & CO., Inc.

Equitable Building, 120 Broadway, New York

SEA ISLANDS EGYPTIANS PEELERS

FABRICS TO SPECIFICATION

PASSAIC COTTON MILLS AMERICAN TIRE FABRIC CO.

MARLBORO COTTON MILLS

McColl, S. C.

Tire Fabrics

Combed Sea Island, combed and carded Peelers and Egyptians.

Sold direct, or through Chas. A. Meyer, 350 Broadway, New York City, N. Y.

Yarns

4s to 60s, combed and carded, single and ply; warps, skeins, tubes and cones.

Sold direct, or through E. D. Tannahill, 350 Broadway, New York City, N. Y.

J. H. LANE CO.

334 FOURTH AVE.

NEW YORK

Motor Tire Ducks Hose and Belting Ducks Yarns

CHICAGO BOSTON

TIRE FABRICS

Made of Yarns of Our Own Spinning, and with Machinery of Latest and Most Approved Type

The Fabric for Endurance

MANHASSET MFG. COMPANY, Providence, R. I.

RUBRAX

MANUFACTURERS
of
Elastic
Hydro-Carbons

RUBRAX · THE U.S. ASPHALT REFINING CO · QUALITY FIRST TRADE MARK

Plants and Branches at
BALTIMORE, MARYLAND
CARTERET, NEW JERSEY
PHILADELPHIA, PENNSYLVANIA

THE INTEROCEAN OIL COMPANY
90 West Street: NEW YORK

EXTENSION BLADES AND HANDLES

Mention Extension Blades and Handles to any experienced rubber mill worker and his mind just naturally turns to the I. P. HYDE Brand.—Why? Because he has come to know that they are right for his use, made right for rubber mill work and work right. Let us send you Catalog - R, shows 80 different styles of rubber cutting knives.

HYDE MFG. CO. Southbridge Mass.

I.P. HYDE

YOU CAN

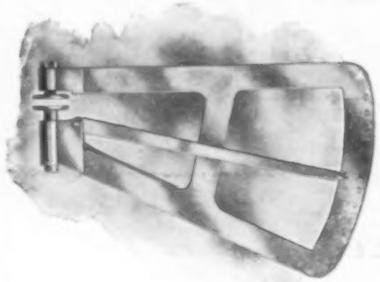
—Dry all kinds of crude rubber in the same kiln at the same time.
—Process it while drying it.
—Prevent oxidation and injury from improper drying.
—Increase its tensile strength
—Reduce the time of breaking down 25 to 50%.
—Dry compounds in their original packages along with the rubber.

With the

Hunter Patent Process

Full Particulars on Request
Address
Hunter Dry Kiln Company, Indianapolis, Ind.
Laboratory and Offices, 26th St. and Cornell Ave.

MEASURING GAUGES



FOR
MEASURING
SHEET
RUBBER

HOME OF
BALL BEARING STITCHERS
AND ROLLERS FOR TIRE & SHOE MANUFACTURING

TOOLS
OF
QUALITY

(ESTABLISHED IN 1849) THE HOGGSON & PETTIS MFG. CO. NEW HAVEN, CONN., U. S. A.

OBALSKI & SWEENEY, Inc.

CRUDE RUBBER

AND KINDRED PRODUCTS

Importers and Traders Building 59-61 Pearl Street

NEW YORK

The Carter Bell M'f'g Co.

Highest Grade

RUBBER SUBSTITUTES

White, Brown & Black

150 Nassau Street New York

ANTIMONY SULPHURET

Every Manufacturer coming to us for SULPHURET has found one of our grades suitable for his product

THE HARSHAW FULLER & GOODWIN CO.

Cleveland

Antimony Works at Elyria, Ohio

MAGNESIA

CARBONATE K&B OXIDE

Special 1918 Contract Prices

KATZENBACH & BULLOCK COMPANY, Inc.

NEW YORK TRENTON BOSTON CHICAGO SAN FRANCISCO

SULPHUR

BROOKLYN SULPHUR WORKS

FLOUR SULPHUR

Extra Fine and Free from Grit. "VELVET SULPHUR" for

RUBBER Manufacturers

BATTELLE & RENWICK

80 Maiden Lane New York, N. Y.

MAGNESIA

Double Calcined Heavy — Carbonate Light Calcined

General Magnesite & Magnesia Co.

29th Street and Montgomery Avenue

Philadelphia

ERNEST JACOBY

CRUDE RUBBER

RUBBER SUBSTITUTES

CABLE ADDRESS JACOBITE BOSTON

BOSTON MASS

BOSTON YARN COMPANY

60 Federal Street Boston, Massachusetts

FABRICS

Auto Fabrics to Specification Sea Islands, Egyptians and Peelers

WILLIAM L. LYALL, President and Treasurer
THOMAS M. GARDNER, Secretary

HENRY V. R. SCHEEL, Assistant Treasurer
T. J. KELLY, Superintendent

BRIGHTON MILLS

PASSAIC, NEW JERSEY

Tire Fabrics of Sea Island, Egyptian and Peeler Cottons

Special Constructions for Special Purposes Where Quality and Service are Foremost Considerations

ALL GOODS SOLD DIRECT

MAIN OFFICE, PASSAIC, New Jersey
New York Office, 257 Fourth Ave.

BRANDER & CURRY

INCORPORATED

FORTY-SECOND STREET BUILDING
NEW YORK, U. S. A.

AGENTS FITCHBURG DUCK MILLS

SEA ISLAND, EGYPTIAN AND PEELER

TIRE FABRICS

CHAFING STRIPS AND LENO BREAKERS

CORD YARNS AND CORD FABRICS, SHEETINGS AND DRILLS

FOR AUTOMOBILE AND RUBBER TRADES A SPECIALTY

EMBOSSING CALENDERS

For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

DRYING MACHINES

with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings

The Textile-Finishing Machinery Co.

Office, No. 83 Exchange Place
PROVIDENCE, R. I.

PERFECTION

VANADIUM STEEL RUBBER SHEARS.

Our Patented Automatic Tension Shears and Scissors are the best on the market.

Used by many leading Rubber and Textile Manufacturers.

Blades constantly aligned. Ease of operation increased. Last longer. Let us prove this by sending you a sample of the size and style you use, for trial. Catalogue on request.

PERFECTION SHEAR COMPANY
No. Woodbury, Conn.

TYSON BROS., INC.

CARTERET, N. J.

MANUFACTURERS

The best grades of Rubber Substitutes and Chemicals for all branches of the Rubber Trade

Western Representative
J. A. KENDALL
524 Second National Bldg., Akron, Ohio

STOCK CARRIED IN AKRON

TYPKE & KING, Ltd.,
ESTABLISHED 1883

Head Offices and Works

Crown Chemical Works
Commonside East, Mitcham, England
ESTABLISHED 1883

CRIMSON AND GOLDEN SULPHURETS OF ANTIMONY

Guaranteed Reliable, and Not to Vary, Always Containing Same Percentage of Free Sulphur
Made with any percentage of Free Sulphur desired

BLACK AND WHITE SUBSTITUTES, BLACK HYPO, ZINC SULPHIDE, ETC.

H. MUEHLSTEIN & CO.

BUY and SELL

Any Grade **SCRAP RUBBER** Any Quantity

NEW YORK
3rd Ave. & Harlem River

CHICAGO
114 W. Van Buren Street

AKRON
311 Second Nat'l Bldg.

BOSTON
176 Federal Street

MONTREAL
32 Colborne Street

CABLE ADDRESS
"STEINMUL" NEW YORK

LONDON, ENGLAND
124 Minorles

20" x 20"

HYDRAULIC
STEAM PLATE
PRESS
FOR
Mechanical Goods

Notice air-cooled ram. Long distance between hot steam plate and cylinder packing. Broad foundation, etc. Send for catalogue.

BOOMER & BOSCHERT PRESS CO.
420 West Water Street
SYRACUSE, N. Y.

T. B. LIEBSTEIN

Buyer of Rubber Machinery of every description, cured and uncured rubber, discarded compound stock, fabric scrap, seconds, chemicals, or any other refuse scrap.

72 Chestnut St., Newark, N. J.

We Are Now Supplying The World
WITH
UNIVERSAL STEEL CALENDER STOCK SHELLS

in 4", 5", 6", 8" and 10" diameters, any lengths from 4" to 100", any size square mandrel holes.

Materials always on hand.
Try us on that rush order.

W. F. GAMMETER Cadiz, Ohio

WHITING

A PRODUCT OF THE U. S. A.

A contract with us means the guarantee of a regular and uninterrupted supply, reliable in quality and economical in cost.

STANDARD AND SPECIAL QUALITIES SUITABLE FOR ALL RUBBER NEEDS

INDUSTRIAL CHEMICAL CO.
200 FIFTH AVENUE, NEW YORK CITY
Manufacturers

The LOEWENTHAL COMPANY

Most Efficient Service in
Buying and Selling

SCRAP RUBBER

BROOKLYN
23 HEYWARD ST.

AKRON
Delaware Bldg.

CHICAGO
947 W. 20th ST.

THE DIE SINKING & MACHINE CO.

MOLD MAKERS AND ENGRAVERS

MANUFACTURERS OF

Molds for Syringe Bags Hot Water Bottles and Mechanical Goods : :

Hose Brands and Belting Dies. Steel Stamps. Aluminum Brands. Serial Numbers. Cutting Dies. Tubing Dies. Sole and Heel Molds.

Catalogue sent on request AKRON, OHIO

JONES & KUHLKE

MANUFACTURERS OF

FOR GENERAL RUBBER WORK **MOLDS** FOR AUTO-MOBILE TIRES

CORES AND SPECIAL MACHINERY

48-58 West Exchange Akron, Ohio

HOUSATONIC

INSULATING,
TUBING *and*
STRAINING
MACHINES,
SPECIAL
MACHINERY,
RUBBER MOLDS

The Housatonic Machine & Tool Co., Bridgeport, Conn.

THOMAS-HYDES

105 EAST HANOVER ST. TRENTON. N.J.

CRUDE RUBBER

Washed,

Vacuum Dried or Refined

CLASSIFIED ADVERTISING

10 Cents a word, minimum charge $2.00, payable in advance. Address replies to box numbers, care THE RUBBER AGE AND TIRE NEWS, 120 West 32d Street, New York.

FOR SALE—Rubber Mill Machinery. One 4½ Allen Double Feed Tube Machine, equipped to run treads with variable speed conveyor belt. Motor driven, direct connected on unit base plate with tuber motor, 440 volts, 3 phase, 60 cycles with controller. Inquire THE GENERAL TIRE & RUBBER CO., AKRON, OHIO.

FOR SALE—Riele Motor drive combination rubber and fabric tester. Ruled stretch indicator 2"-1½"-1" jaw grip sets, 1" eccentric grip set, motor 1/6 H. P. Address Box 62.

SANITARY RUBBER GOODS: Dipping Plant complete (located in Trenton). Will sell for removal or lease for operation where it stands. Write THE RUBBER AGE AND TIRE NEWS, Box No. 59.

THE AKRON EQUIPMENT COMPANY

C. R. QUINE, *President*

Molds, Cores and Machinery for Tire Makers

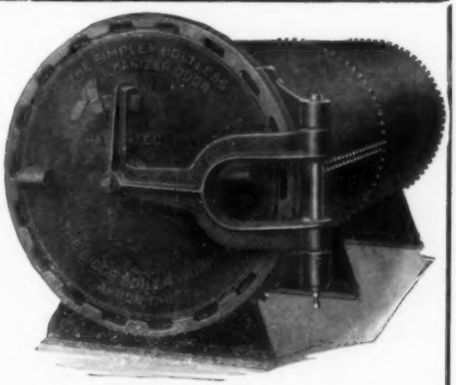
AKRON, OHIO

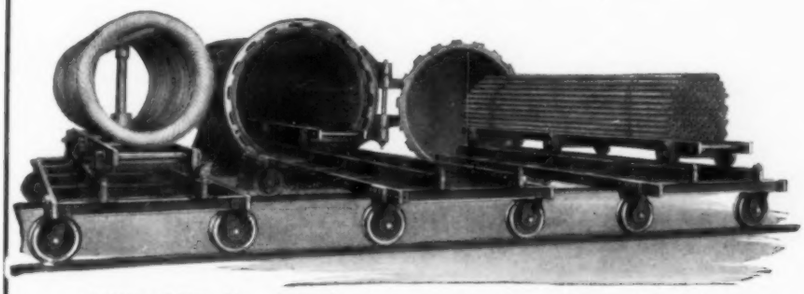
SAFETY *and* EFFICIENCY

Combined by Using the

SIMPLEX BOLTLESS VULCANIZER DOOR

On Horizontal and Vertical **VULCANIZERS**





EQUIPMENT No. 800—Showing our Standard Horizontal Vulcanizer, "Simplex Equipped," with Inside Track and Car, Outside Transfer Trucks and Special Cars for Handling Inner Tubes and Wrapped Tread Casings

EXCLUSIVE FEATURES OF THE "SIMPLEX" DOOR

ENTIRELY SELF CONTAINED
Door operates on its own hinges.

EASE OF OPERATION
Door turns only 8 inches to open and close.

SAFETY INSURED
The safety and tightness of door is not subject to manual operation, as there is not a bolt or nut to tighten. Heavy cast steel lugs automatically support door against pressure.

EFFICIENCY
Can be opened and closed in less than 30 seconds.

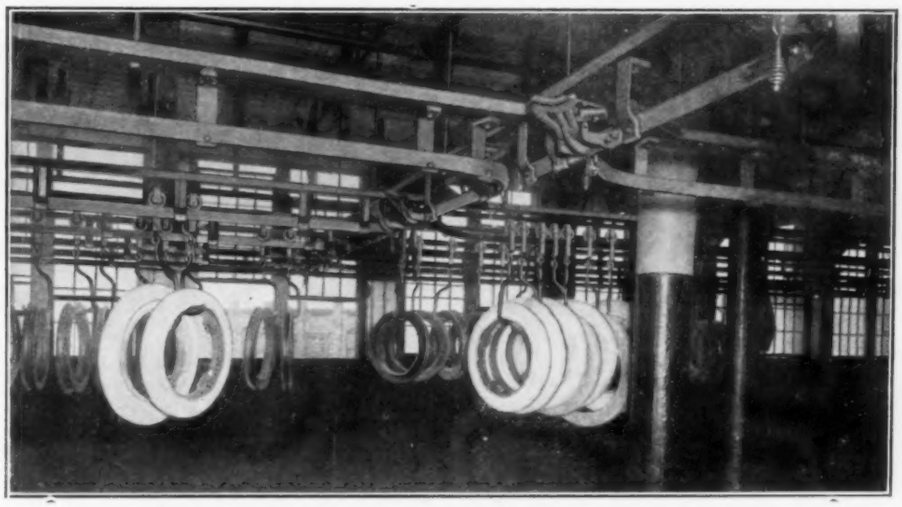
THE BIGGS BOILER WORKS CO.

Kent St. and B. & O. R. R. AKRON, OHIO

J. DUNCAN COMPANY

BOSTON, MASS.

Designers *and* Manufacturers *of*



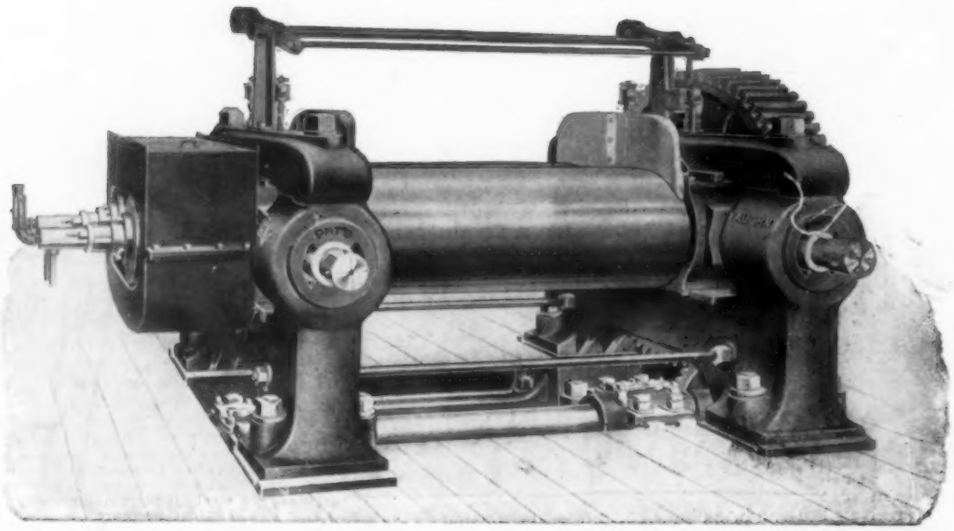
Our Equipment in Use at Fisk Rubber Company

OVERHEAD TROLLEY SYSTEMS

for the economical handling of tires, cores, moulds and every description of rubber goods

Economizes Floor Space **Promotes Convenience**
Cuts Your Costs ***Inquiries Solicited***

THE WILLIAMS PRINTING COMPANY, NEW YORK



VAUGHN MACHINERY

Located at the very heart of the rubber industry, our Engineers are in constant touch with the world's largest producers of rubber goods of every description, which gives them first hand knowledge of the requirements of present day practice.

Safe--Economical--Efficient

THE TURNER, VAUGHN & TAYLOR CO.

Cuyahoga Falls, Ohio